2002

PROVINCE WIDE SERVICES

Annual Report on Activities & Outcomes

Alberta
HEALTH AND WELLNESS

JUNE 2003 **Province Wide Services Working Group**

Preface

The Province Wide Services Annual Report is compiled by the **Health Funding and Costing Branch** of Alberta Health and Wellness. The 2002 Annual Report contains information on the services currently included in Province Wide Services, and activities and decisions of the Province Wide Services Working Group during 2002/2003. Data is provided for actual Province Wide Services volumes and expenditures for the 2001/2002 fiscal year, and budget figures for 2002/2003 and 2003/2004.

Each year the Annual Report also provides an in-depth description of selected Province Wide Services. The 2002 Annual Report highlights the PADIS program operated by the Calgary Health Region, the COMPRU program operated by the Capital Health Authority, and medical genetics activities underway in Alberta (see 2002 Annual Report Features).

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OVERVIEW OF
Province Wide Services

What are Province Wide Services (PWS)?

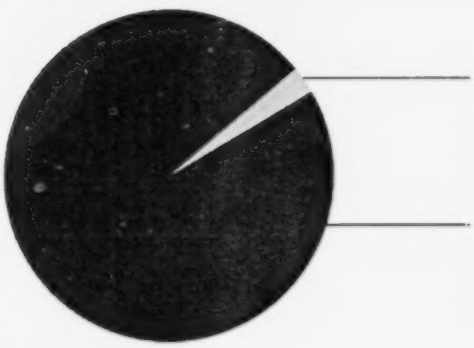
Province Wide Services (PWS) are a select group of complex and specialized medical interventions. They include a number of hospital inpatient procedures (heart surgeries, organ and bone marrow transplants, etc.), clinics and home services, and high cost drugs and devices. Figure 1 illustrates the high-cost nature of inpatient Province Wide Services compared to other inpatient services (note: the costs are regional health authority costs and exclude any physician fee-for-service claims).

Because of their complexity, Province Wide Services require specialized expertise and supporting infrastructure, as well as sufficient volumes to maintain provider proficiency. Thus, these services are provided only by the Capital and Calgary Health Regions, but available to all Albertans.

Province Wide Services are separated from regional health authority Global Funding to ensure special attention and support is provided to these key life-sustaining interventions, and to ensure a provincial approach to planning.

Given the central mandate of Province Wide Services to deliver services to all Albertans, this report will present extensive information on patient region of residence.

Figure 1: PWS Inpatient Cases vs. All Other Cases, 2001/2002



Province Wide Services
9,298 Total Inpatient Cases
2.7% of Total Inpatient Cases
$20,420 Average Cost per Case

All Other Cases
337,573 Total Inpatient Cases
97.3% of Total Inpatient Cases
$5,646 Average Cost per Case

Source: CIHI 2001/2002 Morbidity Data

Province Wide Services Mission Statement

Province Wide Services is intended to fund a narrow band of high cost services that, because of their nature, can only be effectively provided at one or two sites in the province. Province Wide Services are planned collaboratively - between Alberta Health and Wellness, the Calgary and Capital health authorities, and all health regions - to ensure these highly specialized services are provided in the best interests of the province as a whole, with proper medical and financial accountability. Province Wide Services are patient-focussed, equitably accessed by all Albertans, cost effective, cost efficient and with a process to enhance quality.

INVENTORY OF CURRENT
Province Wide Services

Inpatient Services

(Detailed Case Mix Groups (CMGs) are listed in Appendix "A")

- Organ and Bone Marrow Transplants
- Selected Tertiary Services for:
  - Trauma and Burns
  - Neurosurgery
  - Cardiovascular Procedures
  - Neonatology (Low Birthweight Procedures)
  - Oncology

Clinics and Home Services

- Dialysis and Renal Program
- Dialysis Prevention
- Pre-and-Post Transplant Activities
- Medical Genetics
- Islet Cell Transplantation
- HIV Clinics
- STD/TB Clinics
- 1-800 AIDS Hotline
- Poison and Drug Information Services (PADIS)
- Home Enteral Nutritional Therapy
- Craniofacial Osseointegration (COMPRU)
- Children with Complex Health Care Needs
- Education Resource Centre
- Paediatric Transport

High-Cost Drugs

- Immunosuppressants (Cyclosporine, Tacrolimus, Sirolimus, Mycophenolate, Basiliximab, Daclizumab, OKT-3, ATGAM, Ondansetron and Filgrastim)
- HIV Antiretrovirals
- Human Growth Hormone for Chronic Renal Failure and Growth Hormone Deficiency
- Pulmozyme for Cystic Fibrosis
- Flolan and Tracleer for Primary Pulmonary Hypertension

High-Cost Devices

- Implanted Cardiac Defibrillators
- Cranioplasty
- Cochlear Implants

APPROACH

- Funding to support the **A**lberta **P**rovincial **P**roject for **O**utcomes **A**ssessment in **C**oronary **H**eart **D**isease

Rosehaven Provincial Program

- The Rosehaven Program (centered in Camrose) supplies special behavioural care within the continuing care system throughout Alberta.

Ocular Photodynamic (Visudyne) Therapy

- Laser-activated drug (Visudyne) treatment of classic wet age-related macular degeneration

PROVINCE WIDE SERVICES
Working Group

The 1996 Review (review team of Bonnie Laing, Don Schurman, Mike Percy and Clarence Guenter) of Province Wide Health Services in Alberta, provided the first definition of what constitutes PWS activities.

The Province Wide Services Advisory Committee was subsequently established in 1997, with a mandate to develop Province Wide Services budget recommendations, review proposals for new Province Wide Services, ensure the development of action plans for the provision of Province Wide Services, and promote accountability and monitor performance outcomes for Province Wide Services activities.

In March 2002, the PWS Advisory Committee was replaced with a smaller Province Wide Services Working Group (PWSWG) reporting to the Deputy Minister of Health and Wellness. Membership of the PWSWG consists of:

- Chair appointed by the Minister of Health and Wellness
- Chief Financial Officer and Chief Medical Officer from the Capital Health Authority
- Chief Financial Officer and Chief Medical Officer from the Calgary Health Region
- One representative from a non-urban health region
- Assistant Deputy Minister of Finance & Corporate Services for Alberta Health and Wellness
- Secretariat and staff support by Alberta Health and Wellness

(see Appendix B for membership of the PWS Working Group in 2002)

The primary focus of the Province Wide Services Working Group continues to be on funding. Its mandate also includes developing a medical and financial accountability framework for PWS, which involves the development of benchmarks and templates for consistent reporting of outcomes and measures

During 2002, the PWS Working Group developed a set of **Funding Principles** to guide their decisions:

- The Province Wide Services framework will ensure that services are optimally specialized in only one or two sites in order to achieve maximum delivery efficiency, quality and safety.
- Province Wide Services only funds established clinical practice, and not research or experimental therapy.
- New services are to be funded only if appropriate resources available (i.e. not at the expenses of existing services).

- Funds are to be allocated on the basis of predicted Edmonton-Calgary average costs incurred to provide these services, taking into account the desired quality outcomes of services, while maintaining incentives to manage costs. These costs are to be derived from a standardized, agreed upon methodology, and independently verifiable.
- Funding methodologies should be transparent.
- It is expected that the total Province Wide Services expenditure of the two regional health authorities providing Province Wide Services will remain within their total PWS budget. These RHAs are accountable for variances from the funded service volumes and stated performance targets.
- Program personnel within the two provider regions should have the budget information and management authority to achieve the funding targets.

PROVINCE WIDE SERVICES
2002/2003 Highlights

1 2001/2002 Results

Results for the 2001/2002 fiscal year were reported by the Calgary and Capital health regions in the summer of 2002. Additionally, information was received from the Canadian Institute for Health Information (CIHI) in the spring of 2003. The results show that the Capital Health Authority discharged 4,602 Province Wide Services hospital inpatient cases in 2001/2002, virtually unchanged from the previous year's volume of 4,602. Trauma procedures, open heart surgery, and neurosurgery exhibited significant increases, while oncology procedures declined by almost fifty cases.

The Calgary Health Region had 4,696 Province Wide Services inpatient discharges in 2001/2002. Overall volumes were essentially unchanged from the previous year, but were well below the funded volume of 5,182. Most of the increase from the previous year was concentrated in neurosurgery and neonatology volumes.

For dialysis (a non-inpatient service), Capital Health reported 646 patient years of services, compared to 653 funded years. Calgary Health Region reported 617 patient years of services, compared to 642 funded years.

2 2003/2004 PWS Budget

A Province Wide Services Budget totalling $415.0 million for 2003/2004 was announced on April 8, 2003. The funding increase was $23 million or 6.0 per cent above the previous year comparable budget. Capital's larger increase of 8.0 per cent, versus 4.0 per cent for Calgary, was primarily the result of incorporating more recent data, showing higher levels of activity in Capital, into the base upon which the budget projections were made.

Newly funded drugs for 2003/2004 are Tracleer (generic name bosentan) for treating patients with primary pulmonary hypertension, and three new transplant drugs - sirolimus, daclizumab, basiliximab. Funding for Teaching & Research ($35.5 million 2002/2003) was transferred from Province Wide Services to RHA Global Funding, while Province Wide Services funding for neuromodulation therapies was discontinued.

3 Medical Genetics Working Group

The Alberta Medical Genetics Provincial Working Group (AMGPWG) was established in October 2001 as an initiative of Province Wide Services, with chair Dr. Ron Wensel. Key mandates of the Working Group were to:

- review and assess current medical genetic services in Alberta;
- determine if there were opportunities to achieve greater efficiency in the delivery of medical genetic services;
- identify the advantages and disadvantages of different options concerning the organization and administration of medical genetics in Alberta; and
- make recommendations on funding requirements and priority needs for medical genetic services in Alberta

Following an eighteen month review of medical genetics services, the AMGPWG reported in

summer 2002 with nine recommendations. Initial achievements of the Medical Genetics Working Group also included completion of a standard financial reporting template, and improved Edmonton-Calgary collaboration and synergy.

Based on the AMGPWG's recommendations, a Provincial Medical Genetics Steering Committee was established in early 2003. Key mandates include:

- identification of opportunities to improve efficiencies in the delivery of provincial medical genetics services;
- facilitate collaboration between the Departments of Medical Genetics at the University of Calgary and the University of Alberta;
- determination of funding requirements for medical genetics services in Alberta and prioritization of needs;
- receipt of regular reports from functional service committees - clinical genetics, inherited metabolic disorders, biochemical genetics, molecular genetics, cytogenetics, newborn screening program, cancer genetics and community genetics.

Representation on the Steering Committee includes:

- heads of the Departments of Medical Genetics at the University of Calgary and the University of Edmonton
- medical directors of the Medical Genetics Clinical Services at the University of Calgary and the University of Edmonton
- one lab director from each of the cytogenetics, molecular genetics, and biochemical genetics chosen from the University of Calgary and the University of Edmonton
- chair of Province Wide Services or delegate
- Alberta Cancer Board representative
- an ethicist with a legal background
- an out of province human geneticist
- heads of Child Health in Calgary and Edmonton who would also represent the faculties of medicine at the Universities of Calgary and Edmonton.

4 PWS Clinical Accountability Indicators

A process was undertaken during 2002 to develop templates of key indicators for the three main areas of Province Wide Services - cardiac, renal, transplant. The process included provincial consensus workshops attended by clinical and administrative leads, a non-urban RHA representative, Alberta Health and Wellness staff, and a facilitator.

These workshops resulted in the initial identification and agreement on specific clinical indicators. A follow-up conference call between Ministry staff and administrative / clinical leads further refined the initial list of indicators to a smaller, more practical set.

Although these lists represent an initial milestone, much work remains to formalize definitions and reporting processes and templates. A follow-up workshop to address these outstanding issues is to take place mid-2003, with the goal of implementing these indicators for the 2002/03 reporting year.

5 New Province Wide Services

A number of services were transferred to Province Wide Services funding beginning April 1, 2003. These include: Emerging Drugs, Rosehaven, 1-800 AIDS Hotline, Education Resource Centre, and Sexually Transmitted Diseases (STD)/TB Clinics.

Emerging Drugs funding provides a bridging measure to help pay for new, expensive therapies not yet covered by a publicly funded drug program. This program also funds HIV viral load testing.

Funding is provided to East Central Health for the Rosehaven Care Centre in Camrose. Rosehaven operates as an auxiliary hospital within the continuing care system, with approximately 137 beds providing specialized services for geriatric psychiatry or behavioral management.

The 1-800 AIDS Hotline is a confidential information service that operates 24 hours a day within the province of Alberta. Callers are able to listen to taped information on sexually transmitted diseases (STD) or Human Immunodeficiency Virus (HIV). The caller has an option to discuss this information with a nurse specialist from Monday to Friday during business hours. People using this service are provided confidential information on STDs, HIV and sexuality issues.

The Education Resource Centre in Calgary provides educational support for staff in nursing homes, auxiliary hospitals and home care sites in Alberta with a provincial focus.

The STD/TB clinics provide health care services related to tuberculosis and sexually transmitted diseases (STDs) to all Alberta residents through specialized outpatient clinics in Edmonton and Calgary and certain community health units. These clinics offer confidential assessment, treatment and education services that are delivered by specialized physicians and nurses. Active tuberculosis and certain sexually transmitted diseases are considered "reportable" diseases and Health Canada is notified of each confirmed case. Knowledge of the distribution of these diseases in Alberta, provided by surveillance data, helps to guide programs and development of strategies relevant to local epidemiology.

Activity and outcome data on these new PWS services will appear in the 2003 PWS Annual Report.

PROVINCE WIDE SERVICES

Activities and Outcomes

Inpatient Services

Province Wide Services hospital inpatient services include organ and bone marrow transplants, most heart surgeries and cardiac angioplasties, complex trauma and burn cases, selected neurosurgical procedures, neonatology (low birthweight) and selected oncology services.

As seen in Table 1, over the period 1998/1999 to 2003/2004, PWS hospital inpatient services in total have grown at an average annual rate of 6.3 per cent. The average annual growth rate for cardiovascular procedures was 6.8 per cent, while trauma and burns cases have grown at a rate of only 2.1 per cent - roughly the rate of population growth.

As their name implies, Province Wide Services are provided to residents from across Alberta and information in this regard is closely monitored. Figure 2 displays the regional shares of PWS inpatient services relative to regional population shares. For example, in 2001/2002, residents of Region 4 (new regional boundaries) represented 9.6 per cent of Alberta's population, and received 9.7 per cent of all PWS inpatient services. In general, the three northern regions (7,8,9) receive a somewhat smaller percentage of inpatient services relative to their population share.

Table 1: **PWS In-patient Services Activity (current PWS list)**

	ACTUALS				FUNDED	FUNDED	AVERAGE ANNUAL GROWTH
Inpatient Service	98/99	99/00	00/01	01/02	02/03	03/04	98/99-03/04
Organ & Bone Marrow Transplants	353	351	356	384	423	431	4.1%
Trauma and Burns	451	403	417	474	505	500	2.1%
Neurosurgery	1,665	1,716	1,793	1,773	1,874	1,883	2.5%
Cardiovascular	5,129	5,264	5,392	5,418	6,732	7,132	6.8%
Neonatology	482	477	605	585	549	608	4.8%
Oncology	176	197	207	658	649	668	30.6%
Total Inpatient Services (Separations)	8,256	8,408	8,770	9,292	10,732	11,222	6.3%

Source: CIHI Morbidity Data and PWS Budgets
Note: grouper changes and changes in PWS funded services impact historical figures, caution should be used in their interpretation

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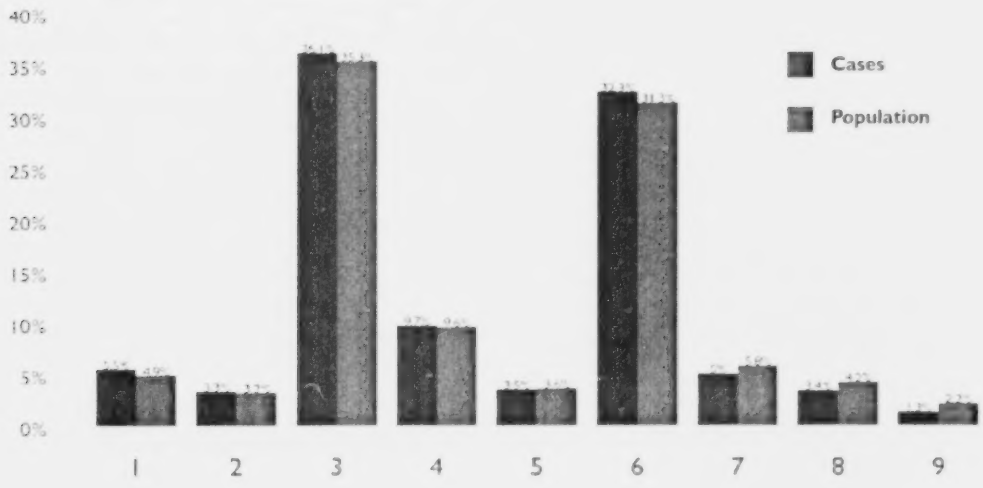
Figure 2: **PWS Inpatient Services by Patient Region of Residence**



Source: CIHI 2001/2002 Morbidity Data

Table 2: **PWS Organ and Bone Marrrow Transplants - Grouped Hospital Discharges**

	96/97	97/98	98/99	99/00	00/01	01/02	03/04 Budget
Heart/Lung (CHA)	35	36	33	35	50	58	70
Kidney (CHA.CHR)	117	128	143	134	117	143	144
Liver (CHA)	34	33	47	55	40	45	53
Bone Marrow (CHR)	104	125	130	127	149	138	164
Transplants Total	**290**	**322**	**353**	**351**	**356**	**384**	**431**

Source: CIHI Morbidity Data

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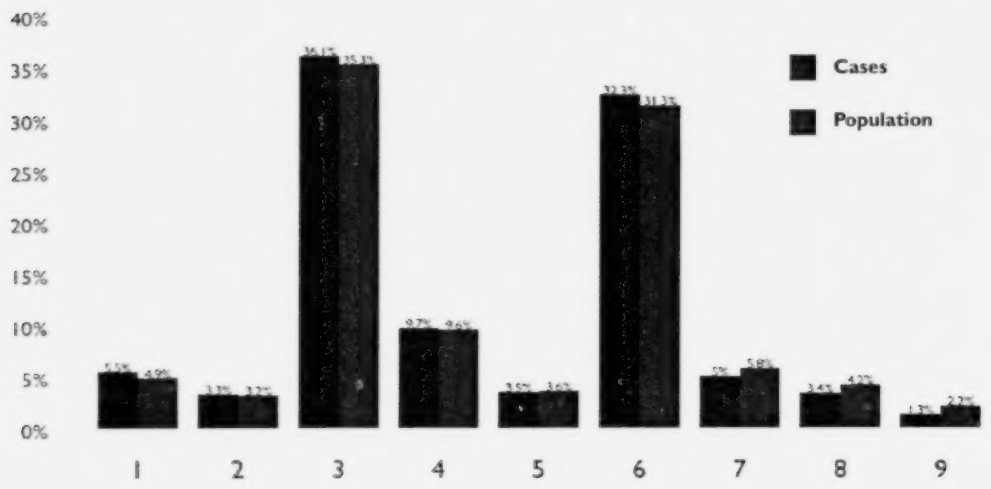

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Organ and Bone Marrow Transplants

Donation and Transplant Rates

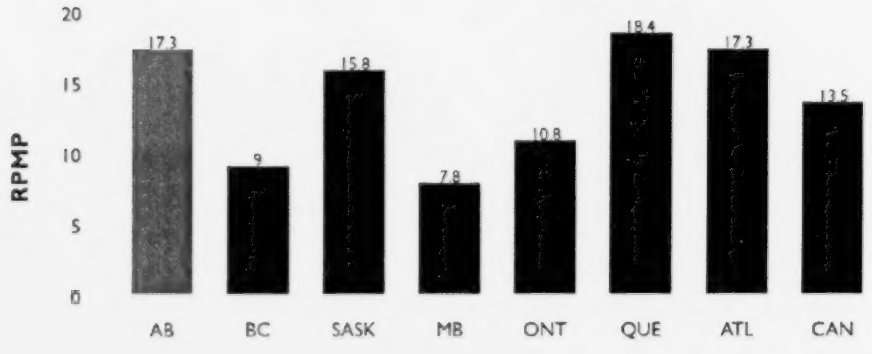
Organ and bone marrow transplants continue to exhibit strong growth rates - the average annual growth rate from 1996/1997 to 2001/2002 in total was 5.8 per cent (Table 2).

The number of transplant cases performed depends on the availability of donated organs. In 2001/2002, Capital Health not only expanded its effort in obtaining vital organs from outside of the country, but were also successful in transplanting more organs from living donors.

Information on organ donor activity is maintained by the Canadian Organ Replacement Register (CORR). Canada's organ donor rate has been relatively stable since 1993, at around 14 donors per million population. CORR reported 405 organ donors in Canada during 2001, of which 53 donors were Albertans. The 2001 Alberta donor rate of 17.3 per million population exceeded the national average rate of 13.5 per million population (Figure 3), but was down slightly from previous years.

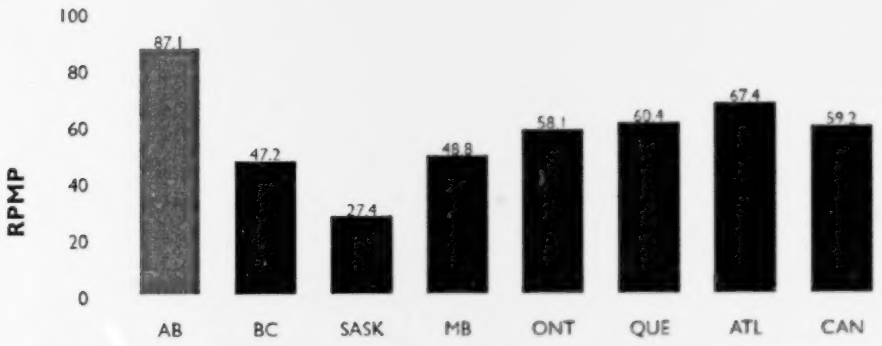
Current donor rates have not provided enough organs to keep pace with the demand from those waiting for an organ transplant. This shortage of donor organs is a very real constraint on transplant programs. Further, as transplant outcomes become more successful, referrals increase, leading to even larger numbers of

Figure 3: Organ Donor by Province in 2001: Rate per Million Population (RPMP)



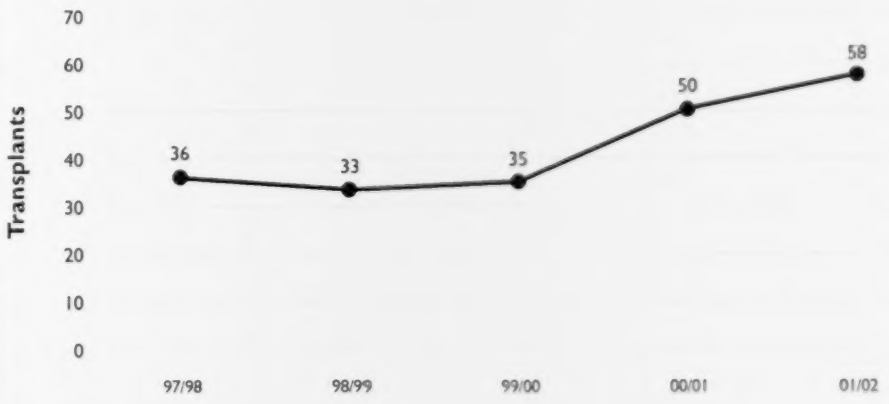
Source: Canadian Organ Replacement Register

Figure 4: Transplant Rates per Million Population across Canada in 2000



Source: Canadian Organ Replacement Register

Figure 5: PWS Heart/Lung Transplants



Source: CORR/CIHI 2002 Report

people waiting and not surviving long enough to receive a vital organ. Efforts to promote organ and tissue donation are under way at both national and provincial levels.

In terms of transplant rates, Alberta has an internationally respected organ transplant program. Since the inception of the provincial transplant programs, Alberta has conducted more than 3000 transplants – the third highest cumulative volume among provinces, behind Ontario and Quebec. According to the 2000 CORR data, Alberta's transplant rate of 87.1 per million population continues to be the highest in Canada by a wide margin, well above the national average rate of 59.2 per million population (Figure 4).

Heart and Lung Transplants

The first heart transplant operation in Alberta was performed in the mid 1980s. Since that time, more than 300 heart transplants have been performed in the province. According to the CORR 2002 report, Alberta recorded the highest heart transplant rate of 13.7 per million population. This rate is more than double that of the next closest province, Quebec, with a rate of 5.8 per million population.

The first Alberta case of lung transplantation from a living donor was performed in 2001/2002. CORR data showed that short and long-term outcomes for lung transplants in Alberta are comparable or superior to the overall Canadian experience.

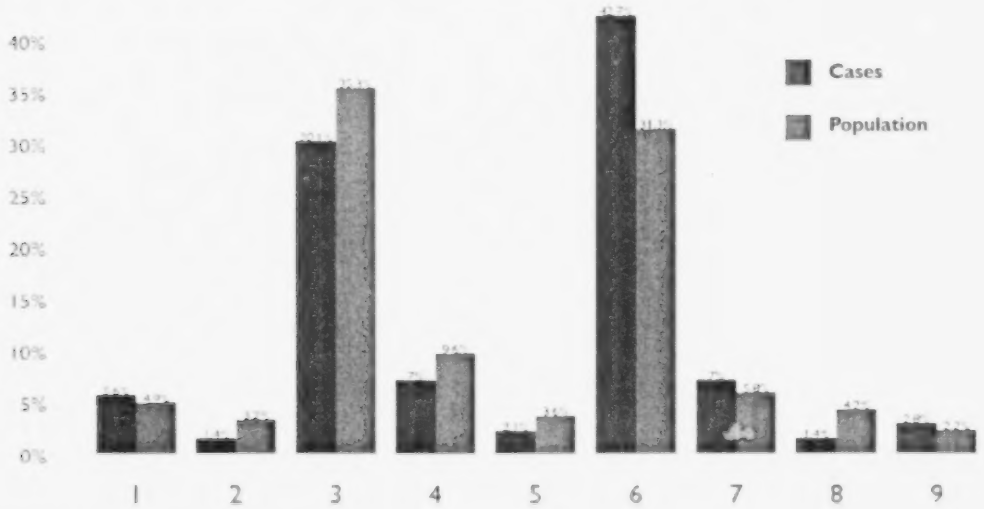
During 2001/2002, the University of Alberta performed 58 PWS heart and lung transplants, compared with 50 during 2000/2001. As shown in Figure 5, heart/lung transplant volumes have significantly increased since 1999/2000.

Table 3: **Kidney Transplants by Recipient Region**

Health Region			
Region 1	8	Region 6	61
Region 2	2	Region 7	10
Region 3	43	Region 8	2
Region 4	10	Region 9	4
Region 5	3	**Total**	**143**

Source: CIHI 2001/02 Morbidity File

Figure 6: **PWS Kidney Transplants by Patient Region of Residence**



Source: CIHI 2001/2002 Morbidity Data

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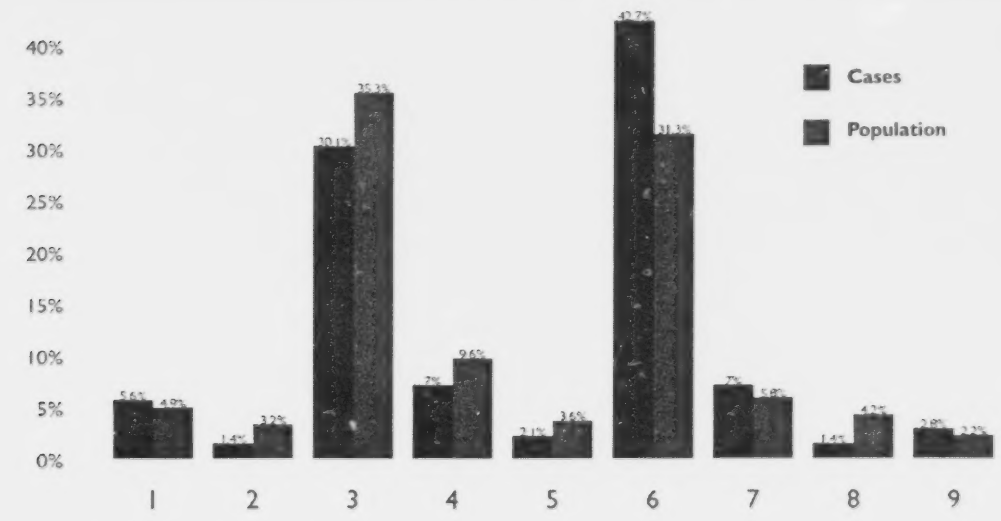


Source: CIHI 2001/2002 Morbidity Data

Kidney Transplants

Kidney transplantation continues to provide persons with kidney failure a longer lifespan and higher quality of life compared to ongoing dialysis treatment. A total of 143 kidney transplants were carried out in Alberta during 2001/2002. The first laparoscopic living donor kidney procurement was performed in Calgary during this period. Anticipated success with this new technique is expected to increase the number of living donors in the future. Table 3 indicates patient region of residence for kidney transplants.

From Figure 6, it appears that kidney transplants are somewhat disproportionate between the Capital and Calgary regions, with Capital residents receiving proportionately more services.

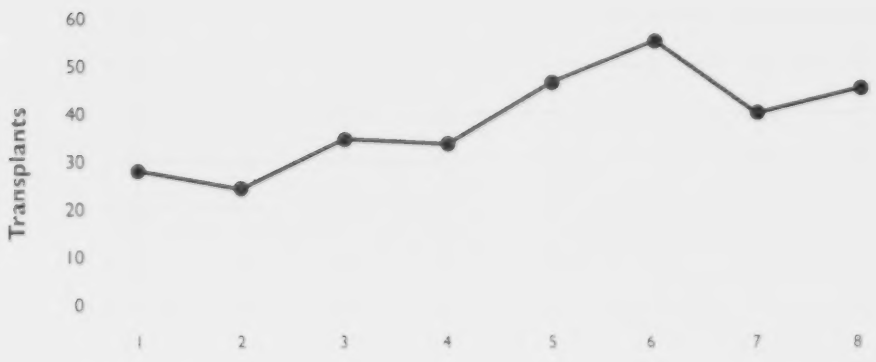
Liver Transplants

Liver transplantation in Alberta is performed exclusively at the University of Alberta Hospital in Edmonton. Figure 7 illustrates liver transplant volumes since 1994/1995. Despite a decline in procedures in 2000/2001, the trend over the past eight years has been one of steady increase.

As with other transplant programs, volumes are dependent on the number of available organs. Technology now exists to transplant split livers from living donors, potentially increasing the number of organs available. Twenty-six Albertans were on the waiting list for a liver transplant in 2001/2002, unchanged from the previous year.

Table 4 and Figure 8 report the distribution of liver transplant recipients across Alberta.

Figure 7: PWS Liver Transplant Activity — University of Alberta



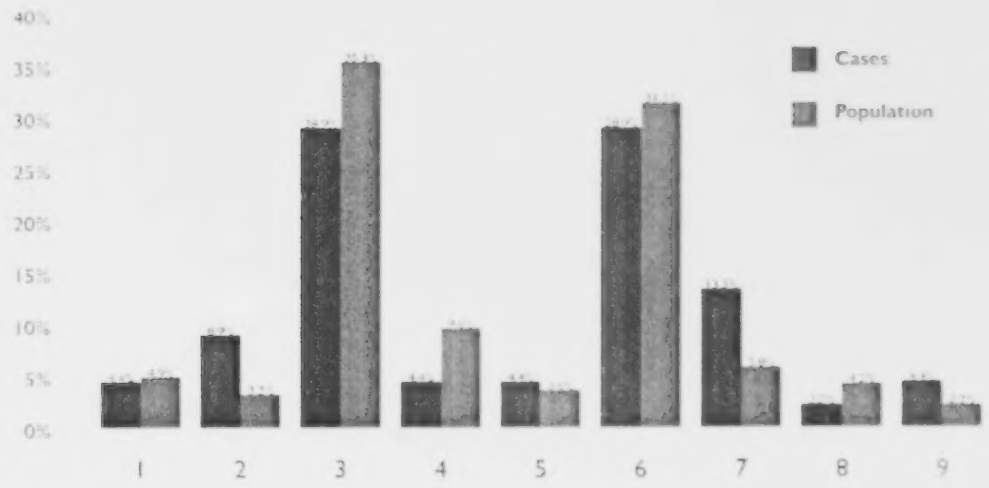
Source: CIHI Morbidity Data

Table 4: **Liver Transplants by Recipient Region**

Health Region			
Region 1	2	Region 6	13
Region 2	4	Region 7	6
Region 3	13	Region 8	1
Region 4	2	Region 9	2
Region 5	2	Total	45

Source: CIHI 2001/02 Morbidity File

Figure 8: **PWS Liver Transplants by Patient Region of Residence**



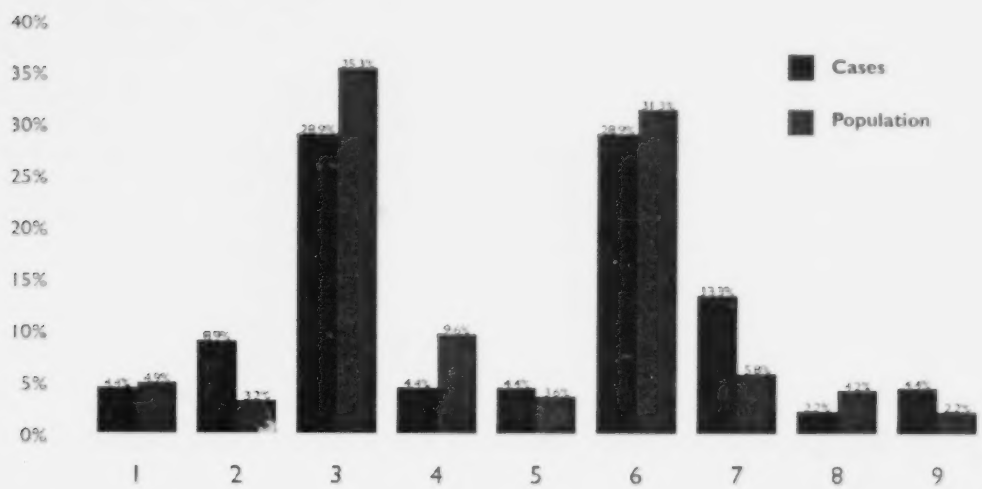
Source: CIHI 2001/2002 Morbidity Data

Table 4: Liver Transplants by Recipient Region

Health Region			
Region 1	2	Region 6	13
Region 2	4	Region 7	6
Region 3	13	Region 8	1
Region 4	2	Region 9	2
Region 5	2	**Total**	**45**

Source: CIHI 2001/02 Morbidity File

Figure 8: PWS Liver Transplants by Patient Region of Residence



Source: CIHI 2001/2002 Morbidity Data

Bone Marrow Transplants

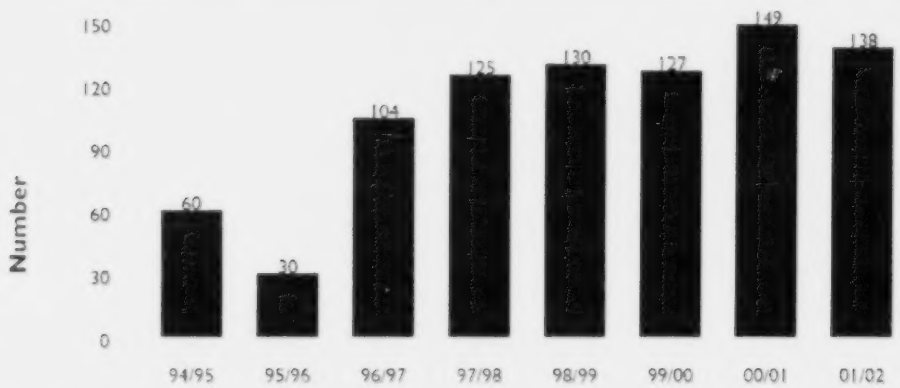
The Calgary Health Region provides a bone marrow transplant program which serves all Albertans. Adult inpatient care is delivered at the Foothills Medical Centre, with outpatient services provided by the Tom Baker Cancer Centre. For pediatric patients, both inpatient and outpatient care is delivered by the Alberta Children's Hospital.

Bone marrow transplant (BMT) is a very dynamic program, with clinical practice, technology and drug protocols continuing to evolve. Treatment protocols are changing in the area of double transplants, donor lymphocyte infusions (for patients not responding to the original BMT), and cord blood transplants (to expand pediatric transplant eligibility). In addition, new BMT indications are emerging relative to more high risk hematologic and metabolic disorders. Corresponding increases in patient volumes and acuity of care are expected.

In 2001/2002, the program successfully recruited a new physician from the United States and recorded the first use of monoclonal antibodies in a Clinimax process to reduce tumor and cell mismatch burdens. In addition, transplants for women with breast cancer were discontinued based on evidence questioning their efficacy for this indication.

Outcomes for BMT procedures are consistently comparable to the best programs in the world. In 2001/2002, 138 PWS transplants were performed (Figure 9). This volume was well below the funded volume of 166 and represents a decrease of 7 per cent - only the second annual volume decline recorded.

Figure 9: PWS Bone Marrow Transplant, 1994/1995 to 2002/2002



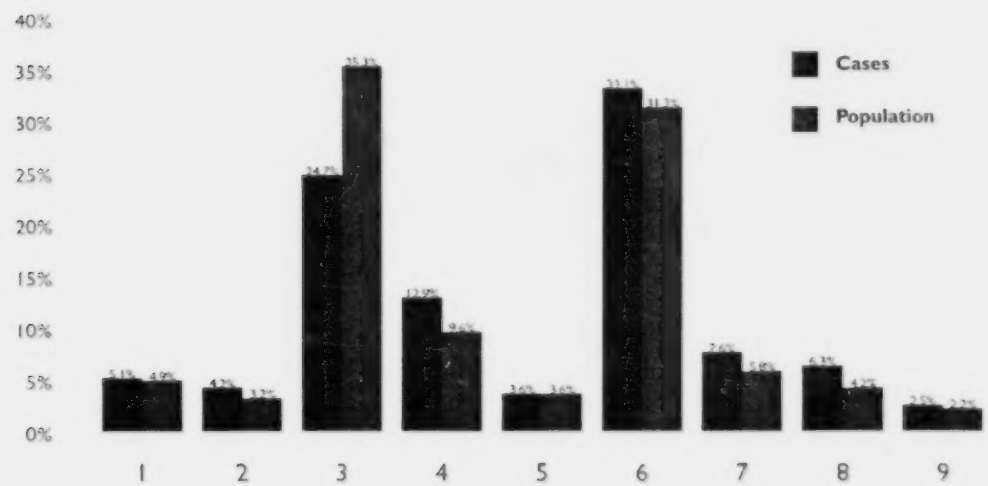
Source: CIHI 2001/2002 Morbidity Data

Table 5: PWS Trauma and Burns Services Provided to Health Regions 2001/2002

Health Region			
Region 1	24	Region 6	157
Region 2	20	Region 7	36
Region 3	117	Region 8	30
Region 4	61	Region 9	12
Region 5	17	**Total**	**474**

Source: CIHI 2001/02 Morbidity File

Figure 10: Trauma and Burn Procedures by Patient Region of Residence



Source: CIHI 2001/2002 Morbidity Data

Trauma and Burns

PWS funds the most severe burn and injury cases. Major trauma services include intracranial and spinal procedures for trauma, as well as tracheostomy and gastrostomy procedures for trauma.

The impact of trauma and burn cases can be significant. These injuries often involve a prolonged hospital stay, require extensive health care resources, and can result in loss of life or reduced quality of life and diminished productivity. Case volumes are difficult to predict and can vary considerably from year to year. Population growth, personal lifestyles, weather and natural disasters, and workplace safety practices all contribute to trauma and burn volumes.

PWS trauma volumes increased by 10.8 per cent during 2001/2002. After declining for two years, burn volumes increased in 2001/2002. The provincial distribution of PWS trauma and burn services is shown in Table 5 and Figure 10.

Neurosurgery

Province Wide Services also funds tertiary neurosurgeries such as craniotomy and spinal procedures, extracranial vascular procedures, ventricular shunt revision and adrenal and pituitary procedures. These procedures often present as emergencies and cannot be capped or managed within a target.

There were 1,773 PWS neurosurgery cases reported for 2001/2002, a virtual doubling from the activity level in 1994/1995. This growth in neurosurgery volumes has not been even across the Capital and Calgary health regions: volumes grew by 41 per cent in Calgary, compared to three per cent in the Capital region. This differential was the result of Calgary bringing the level of its services up to the levels provided in Capital, as well as significant technological investment undertaken by the Calgary region. The first intraoperative MRI in the world was introduced in Calgary in 1999/2000. As a follow-up, work is

Table 6: PWS Neruosurgery Services by Recipient Region 2001/2002

Health Region			
Region 1	103	Region 6	608
Region 2	65	Region 7	90
Region 3	579	Region 8	59
Region 4	155	Region 9	26
Region 5	88	**Total**	**1773**

Source: CIHI 2001/02 Morbidity File

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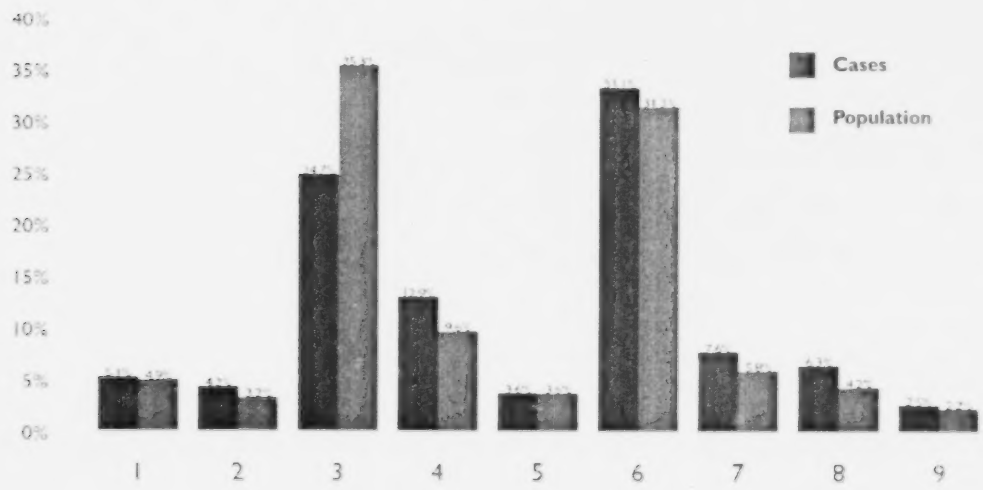

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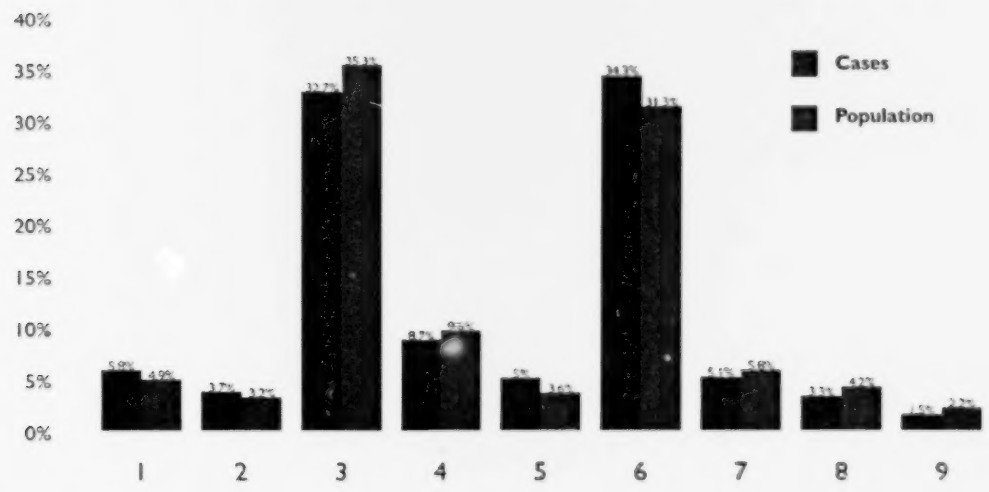
proceeding on a neuroarm device that allows robotic precision in smaller surgical openings. In addition, the region has recently acquired a state-of-the-art Novalis machine, significantly enhancing its radiosurgery capabilities.

Neurosurgery practice continues to be moulded by technological change, the use of new materials (onyx), and emerging protocols employing catheter-based endovascular techniques.

Table 6 and Figure 11 show the 2001/2002 distribution of Province Wide Services neurosurgery services by recipient health region.

Figure 11: PWS Neurosurgery Services by Patient Region of Residence



Source: CIHI 2001/2002 Morbidity Data

Cardiovascular Services

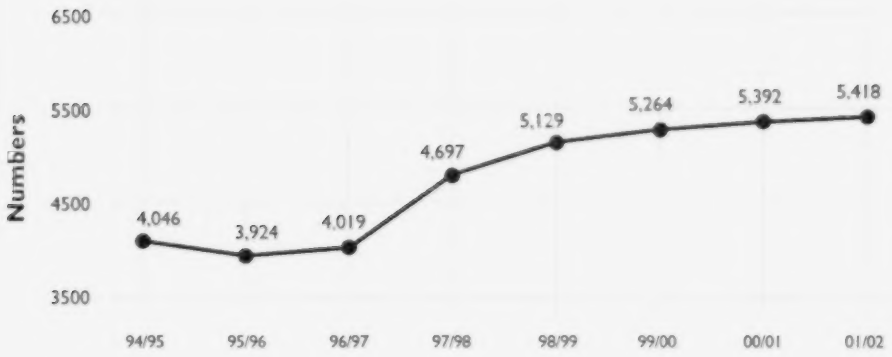
Cardiovascular disease (heart disease and stroke) continues to be the leading cause of death of more than one-third of Canadians and is the most common reason for adult hospitalization. Cardiovascular disease has major impacts on patient quality of life, often leading to chronic pain or discomfort, disability, unemployment and activity restriction.

Despite the impact of cardiovascular disease, little significant improvement has been made in reducing the primary risk factors of smoking, physical inactivity, obesity, diabetes, high blood pressure, and dyslipidemia. Although the risk factors are primarily concentrated within the adult population, behaviors that increase these risks begin in early childhood. Some sobering developments are occurring in that regard: obesity is a problem for a significant portion of children aged 7 to 12; physical activity decreases markedly, particularly among young women; and rates of smoking for youth aged 15 to 19 continue to increase, with the greatest increase among young women.

The impact of the risk factors is being exacerbated by an aging population. Acute myocardial infarction and ischemic heart disease generally become problematic at age 45 for men and age 55 for women. An increase in the elderly population with high risk profiles can be expected to strain an already burdened system. Elderly cardiovascular patients will likely impact the full range of health care providers: ambulatory care, acute and chronic care hospitals, rehabilitation, home care and support, pharmaceuticals, and health education.

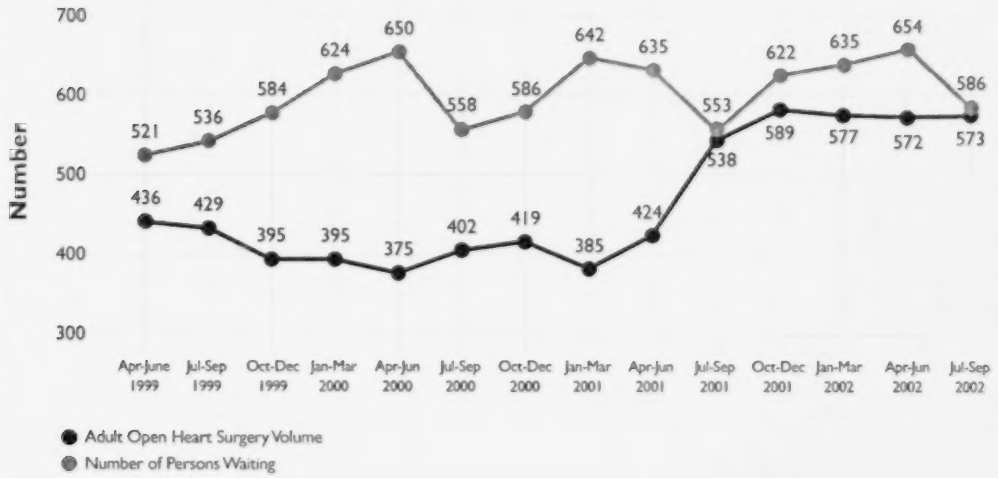
Compared with other provinces, Alberta has the fourth highest rate of heart attack (173 per 100,000 population), the third highest rate of other circulatory diseases (915 per 100,000 population), and the third shortest average length of stay for heart attack patients.

Figure 12: PWS Cardiovascular Procedures, 1994/1995 to 2001/2002



Source: CIHI Morbidity Data

Figure 13: Adult Open Heart Surgery Volume and Number of Persons Waiting: Apr-Jun 1999 – Jul/Sep 2002



Growth of Cardiovascular Procedures

PWS cardiac procedure (coronary bypasses, angioplasties, cardiac valve surgery, major cardiovascular procedures, other cardiothoracic procedures) volumes have been increasing (Figure 12) as a result of a growing prevalence of heart disease, combined with technological advances in treatment. The average annual growth rate of cardiovascular activity from 1994/1995 to 2001/2002 was 4.4 per cent.

The Canadian Institute of Health Information publishes health indicators by region in its 2003 Health Indicators report. A widely accepted indicator for cardiac services is the age-standardized coronary bypass surgery rate. The national average is 95.5 procedures per 100,000 population. Although both the Calgary and Edmonton rates of 83.7 and 93.9 have increased, they remain below the national average, with a statistically significant difference evident for Calgary. However, given the extent of coronary angioplasty activity in Alberta (an alternative intervention to bypass surgery), some caution should be used in interpreting variations in bypass surgery rates. Also, compared with other provinces, Alberta has the third shortest average length of stay for heart attack patients.

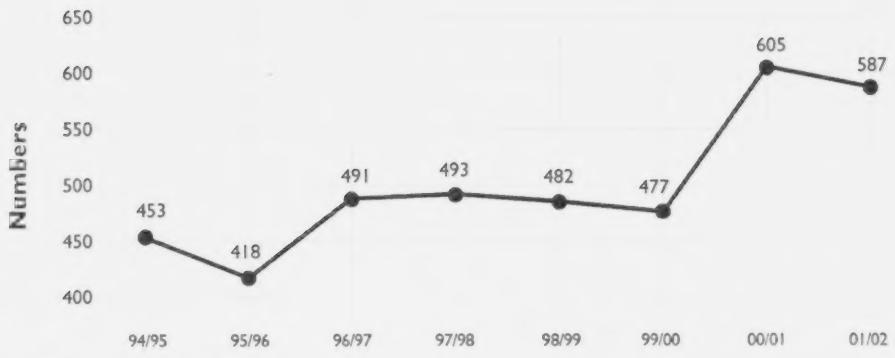
Cardiac Wait Lists

Increases in surgical volumes are expected to reduce wait lists and waiting times for adult open-heart surgery. The provincial target is to reduce average wait times to one week for urgent inpatients, two weeks for urgent outpatients and six weeks for non-urgent outpatients. However, at the same time referrals for open-heart surgery are continuing to increase significantly as a result of the growth and aging of Alberta's population, surgical advances and improved access.

Figure 13 shows that despite an increase in surgical volumes since mid-2001, the expected decline in the number of persons waiting for surgery has not materialized. The wait list was roughly the same in mid-2002 as it was in mid-1999. Wait lists appear to be seasonal, with the list peaking in the spring and declining afterwards.

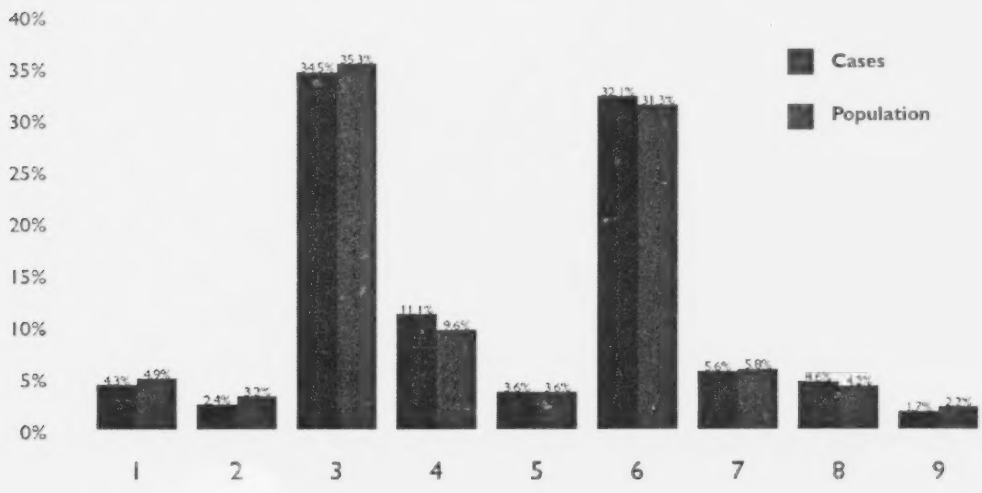
Alberta Health and Wellness, PWS Working Group, Capital Health Authority and Calgary Health Region will continue to monitor waiting times and wait lists and recommend appropriate action plans so Albertans receive the services they need in a timely manner.

Figure 14: PWS Neonatology Trends in Alberta, 1994/1995 to 2002/2002



Source: CORR/CIHI 2002 Report

Figure 15: PWS Neonatology Services by Patient Region of Residence



Source: CIHI 2001/2002 Morbidity Data

Neonatology

Low birthweight infants weigh less than 2,500 grams. A number of risk factors contributing to low birthweight have been identified: smoking or substance abuse during pregnancy, high or low maternal age, low socioeconomic status or level of maternal education, poor prenatal care, pre-term birth, multiple pregnancy and baby gender.

This patient population is unpredictable, usually presents as an emergency, and is typically difficult to manage within predetermined targets. The concern with low birthweights relates to the high correlation with a number of health conditions such as maternal, fetal, neonatal and long-term complications, as well as fetal and infant mortality. Extremely low birthweight children have higher rates of disability in numerous areas, and a high level of educational support is required for these children.

According to Vital Statistics birth data, the low birthweight rate per 100 live births in 2000 was 6.1. Although the rate has stabilized since 1995, it remains higher than it was in 1986 (5.5). Given that the low birthweight rate for singleton births has declined over the past 15 years, the increase must be due to rising incidence of pre-term and/or multiple births. In 2000, 72 per cent of low birthweight births were pre-term births, 25 per cent were multiple births, and fully one fifth were both pre-term and multiple births. On a regional basis, the low birthweight rate was statistically higher than the provincial average in the Calgary Health Region, and statistically lower than the Alberta average in RHA 14 (the former Peace Health Region).

Table 7: PWS Neonatology Services by Recipient Region 2001/2002

Health Region			
Region 1	25	Region 6	188
Region 2	14	Region 7	33
Region 3	202	Region 8	27
Region 4	65	Region 9	10
Region 5	21	**Total**	**585**

Source: CIHI 2001/02 Morbidity File

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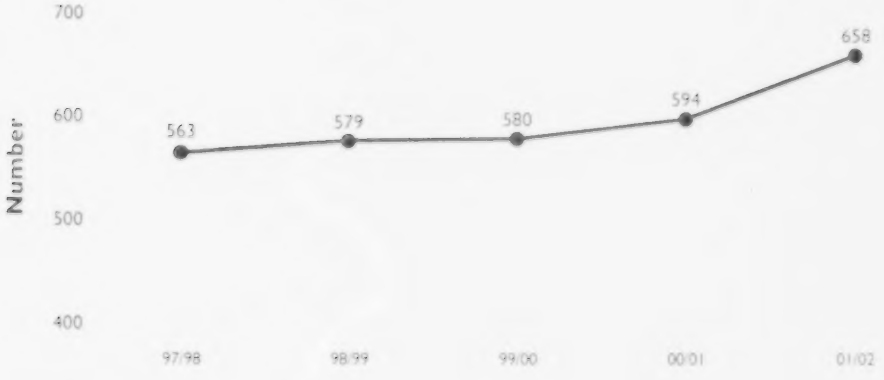
Table 8: PWS Oncology Services by Recipient Region 2001/2002

Health Region			
Region 1	27	Region 6	244
Region 2	14	Region 7	54
Region 3	190	Region 8	27
Region 4	67	Region 9	5
Region 5	30	Total	658

Source: CIHI 2001/02 Morbidity File

Figure 16: PWS Oncology Inpatient Cases, 1997/1998 to 2001/2002



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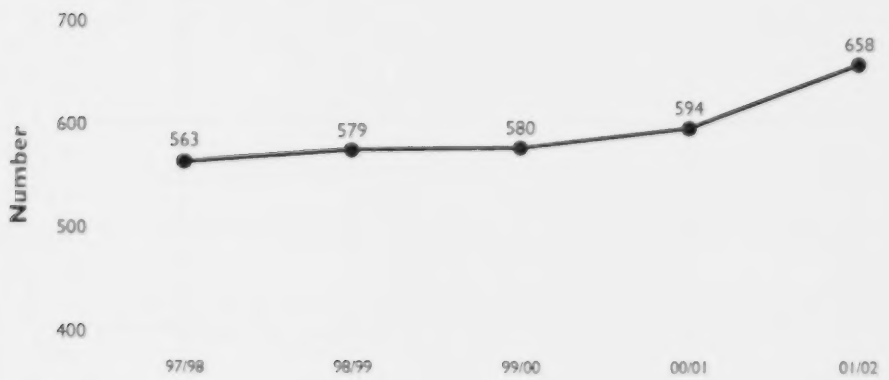


Source: CIHI Morbidity Data

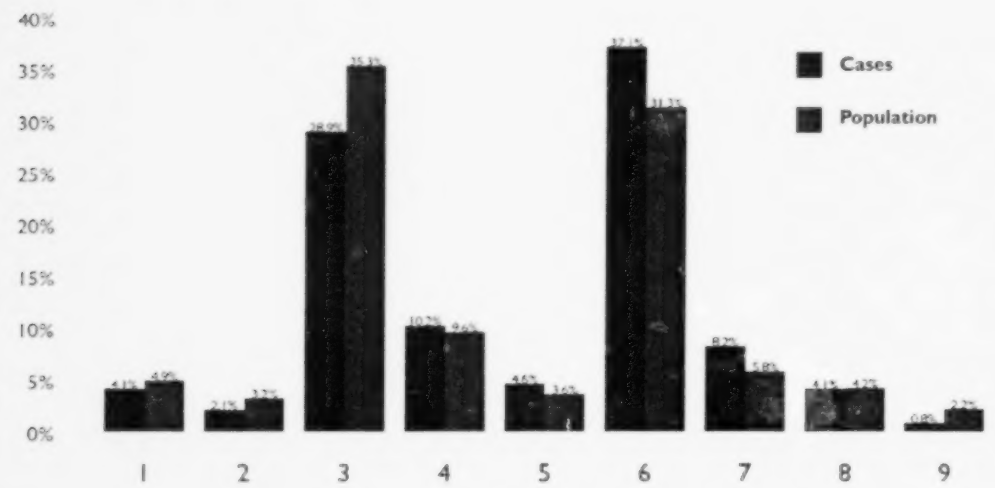
Both the Capital and Calgary health regions maintain neonatal intensive care facilities which are among the most advanced in North America. From 1994/1995 to 2001/2002, low birthweight cases funded by Province Wide Services grew at an average annual rate of 3.8 per cent. Although there has been a significant increase in these cases in recent years, the dramatic increase shown in Figure 14 may reflect problems with the historical data series.

The 2001/2002 distribution of PWS Neonatology cases by recipient health region is shown in Table 7 and Figure 15.

Oncology

Province Wide Services funds selected oncology inpatient procedures (listed in Appendix A). Overall inpatient volumes (Figure 16) have grown at an average annual rate of four per cent since 1997/1998. The costs and resource requirements of treating these complex patients have increased as protocols evolve. A wider range of patients is now being treated, relative to age and disease acuity. The breakdown of PWS oncology services by health region in 2000/2001 is shown in Table 8 and Figure 17.

Figure 17: **PWS Oncology Cases by Patient Recipient Region of Residence**



Source: CIHI 2001/2002 Morbidity Data

2002 ANNUAL REPORT
Features

Poison and Drug Information Service

The Poison and Drug Information Service (PADIS) provides, to all Albertans, a group of specialized services that deal with emergencies, questions and prevention related to medication, chemicals and herbal preparations taken for treatment. The program seeks to enhance patient care, optimize the use of health care resources, promote evidence-based therapy, and coordinate the response to a patient anywhere in urban or rural Alberta.

PADIS operates out of the Foothills Medical Facility in Calgary and its staff includes information specialists (pharmacists and nurses) and physician consultants specializing in medical toxicology. From this location, the program administers a broad scope of services:

Alberta Poison Center

a) Provides immediate treatment specific to the situation, refers to medical care, notifies hospital staff, follows up on response to therapy.

b) Example: ingestion of a common household product by a child.

Drug Information Service

a) Responds to drug and herbal related inquiries from health professionals and promotes appropriate drug usage.

b) Example: a doctor remembers reading about the dosage of a new drug but cannot recall the details.

Medication and Herbal Preparation Advice

a) Provides supplementary information to the public on the optimal use of medications and herbals, in partnership with physicians and pharmacists.

b) Example: a person is concerned about side effects they may be having from their medication.

Occupational Toxicology Service

a) Gives treatment advice or information related to chemical use or exposure at work or in the environment.

b) Example: a chemical fire occurs on an industrial site.

In the course of providing these identified services, PADIS conducts a variety of activities related to surveillance, education and prevention, evaluation and outcomes tracking, and research. Surveillance includes identifying and tracking trends, groups at highest risk, and high risk-toxins, as well as developing and targeting education programs. Evaluation and outcomes tracking determines the incidence of poisoning and provides direction for target programs. It also involves the linkage of PADIS data with regional and provincial data in order to more completely understand poison and drug issues. Lastly, research activities are conducted to extend the boundary of scientific knowledge in this area.

PADIS is at the leading edge of service delivery in this field. It has launched an emergency access video-teleconference link with several rural hospitals for the care of poison patients. In addition, a comprehensive picture of poisoning in Alberta has been developed by linking provincial and regional emergency department data with Poison Centre data.

Recent information indicates that seventy per cent of poison exposures can be safely and cost-effectively managed at home instead of in a health care facility. Further, a call to PADIS can reduce unnecessary emergency department visits for poisoning in young children by 22 per cent. The benefits to both patients and scarce health care resources of this type of program are self-evident.

Table 9: Top 10 poisons in Alberta (2001-2002)

In all age groups

Rank	Substance	No.	%
1	Over the counter pain medicine/fever treatment	3521	13.5
2	Household cleaning products	1913	7.4
3	Personal care products and cosmetics	1393	5.5
4	Alcohols	1108	4.3
5	Plants	1056	3.9
6	Antidepressants	1015	3.9
7	Antianxiety medications & sedatives	903	3.5
8	Hydrocarbons	852	3.3
9	Fumes/gases/vapours	845	3.3
10	Pesticides	806	3.1

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Table 9 cont.

In preschoolers (age <5)

Rank	Substance	No.	%
1	Over the counter pain medicine/fever treatment	1512	12.3
2	Cough/cold preparations	1140	9.3
3	Household cleaning products	1128	9.2
4	Personal care products & cosmetics	1047	8.5
5	Plants	823	6.7
6	Vitamins	627	5.1
7	Pesticides	370	3.0
8	Laundry cleaning products	346	2.8
9	Essential oils	315	2.6
10	Hydrocarbons	269	2.2

In adults

Rank	Substance	No.	%
1	Over the counter pain medicine/fever treatment	1192	14.8
2	Antianxiety medications & sedatives	664	8.3
3	Antidepresants	641	8.0
4	Alcohols	636	8.0
5	Fumes/gases/vapours	525	6.5
6	Household cleaning products	466	5.8
7	Hydrocarbons	359	4.5
8	Pesticides	251	3.1
9	Chemicals	222	2.8
10	Laundry cleaning products	210	2.6

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10	Laundry cleaning products	210	2.6

Craniofacial Osseointegration and Maxillofacial Prosthetic Rehabilitation Unit (COMPRU)

The Craniofacial Osseointegration and Maxillofacial Prosthetic Rehabilitation Unit (COMPRU) is a unique clinical and research unit established by Alberta Health and Wellness to provide highly specialized reconstructive / rehabilitative treatment for patients with major defects of the head and neck resulting from cancer, trauma, and congenital conditions.

Since its inception in 1993, one of COMPRU's areas of focus has been the use of osseo (bone)-integrated implant biotechnologies for prosthetic replacement of craniofacial defects. COMPRU utilizes a comprehensive team of interdisciplinary professionals providing a full range of treatment expertise within a patient-centered model of care. The program is an acknowledged international leader in the provision of both autogenous and alloplastic reconstructive care. The range of clinical expertise provided at COMPRU is internationally unique. In 2002, the world-leading manufacturer of craniofacial implants, Entific Medical Systems, designated COMPRU as the first Centre of Excellence.

As a Province Wide Service, COMPRU is the only Alberta Health and Wellness designated provider for osseointegration care for all Albertans and, as such, treats patients from all health regions of the province. In addition, COMPRU treats patients referred from British Columbia, Saskatchewan, Manitoba and northern regions, essentially functioning as a Western

Figure 18: Out of Region/Province Activity 2002/2003

Source: COMPRU Unit

Canadian service provider (Figure 18). International referrals from the United States of America, South America, Africa and the Middle East have also been received.

A complex matrix of diagnostic, treatment and long-term maintenance care has been developed by COMPRU to serve a patient-centered model. These services include: autogenous ear reconstruction, implant-supported facial and jaw prostheses, head and neck reconstruction, bone anchored hearing aids, and speech and swallowing disorders secondary to treatment for cancer. This activity is supported through the Head and Neck Surgery Functional Assessment Laboratory, the Bone Conduction Assessment Laboratory, and the 3-D biomodeling service.

The COMPRU patient-centered interdisciplinary team model functions within an operational framework of quality management. COMPRU has successfully applied the internationally recognized ISO 9000 standard within a health care context as the framework for its operations. In 1997, COMPRU was the first publicly funded program in Canada to receive registration of a quality management system to the ISO 9000 quality standard. Internationally, COMPRU was also the first to register an ISO 9000 quality system for clinical aspects of osseointegration, including intraoral, facial prosthetic and bone anchored hearing aid applications. COMPRU is also planning to benchmark with European involvement in ISO 9000.

A fundamental mandate for COMPRU is the contribution of new knowledge for advancement of the quality of life for patients. COMPRU has developed innovative research partnerships across four faculties at the University of Alberta and with national and international researchers. Under the auspices of the Implantable Devices Research Group established by COMPRU, research and development activity is focused on: interfacial biomechanics, functional outcomes of head and neck surgery, bone conduction hearing, psychosocial outcomes, osseointegration epidemiology and 3-D biomodeling. To this end, COMPRU has organized major international conferences and numerous multi-disciplinary workshops, provided fellowship training for a broad range of clinical specialists worldwide, and supported a variety of Masters and Doctoral graduate students. COMPRU has been recognized as a finalist in the ASTech Awards for "Leadership in Science and Technology" and through an award from The Alberta Chamber of Commerce for "Strategic Partnering Award of Distinction".

Medical Genetics: Northern Alberta Highlights — Stollery Children's Hospital Molecular Diagnostic Laboratory

All diseases have a genetic component, whether inherited or resulting from the body's response to environmental stresses like viruses or toxins. Molecular genetic testing is the newest and most sophisticated of the techniques used to test for genetic disorders. Direct examination of the DNA molecule is used to detect inherited mutations that cause a disease as well as mutations that lead to an increased susceptibility to a disease.

The Human Genome Project is a worldwide effort to record the entire human three billion DNA base sequence. It has led to a vast increase in the amount of clinically relevant genetic information available. The Molecular Diagnostic Laboratory (MDL) at Stollery Children's Hospital uses this genetic information to provide a state-of-the-art testing service to the population of northern Alberta.

The MDL is certified by the Canadian College of Medical Geneticists and accredited by the College of Physicians and Surgeons of Alberta. It offers genetic testing services for diagnosis of genetic disease, evaluation of disease susceptibilities within family members, and clinical prognosis. This genetics service is playing an increasingly important role in the diagnosis, monitoring, and treatment of diseases.

Commercial development cannot keep pace with the increasing number of gene tests that are becoming theoretically possible as human genome information accumulates. Consequently, MDL staff develop the vast majority of their tests on site using in-house expertise in bioinformatics, molecular genetic methodology, and diagnostic validation. In doing so, the MDL has managed to exceed the pace of development of most other laboratories in Canada. It has become recognized as a national reference laboratory for a number of genetic tests, and has set an international standard for numerous innovative molecular diagnostic procedures.

MDL offers DNA mutation detection in genes responsible for a wide range of disorders including congenital heart defects, muscular dystrophies, metal storage diseases, and familial cancer syndromes. In total, the MDL performs genetic analyses for more than thirty different hereditary disorders that have ages of onset ranging from early childhood to late adulthood.

Medical Genetics Services: Southern Alberta Highlights

The Department of Medical Genetics provides genetic services for southern Alberta, including the city of Red Deer. The clinical and laboratory services site, as well as the Alberta Congenital Anomalies Surveillance System registry, are located at the Alberta Children's Hospital.

The Clinical Genetics Unit provides inpatient and outpatient consultation services. Close to 3,000 families were seen in 2002/2003. There has been an active outreach program for more 30 years. Outreach services were also expanded by the introduction of regular telehealth clinics.

Although wait times to access services can be long, a recent survey of patients revealed that 80 per cent were very satisfied, and a further 16 per cent were somewhat satisfied with the level of service they received. When asked if they would refer a friend to the service, 98 per cent responded positively.

The challenges for clinical service will be to maintain service levels in a clinic where demand is in part being driven by the rapid and ongoing expansion of genetic knowledge. The transfer of this knowledge to the practice of medicine will however provide unique opportunities for the diagnosis and treatment of families with genetic disorders.

Most recently a metabolic disorder physician (jointly with Paediatrics) was recruited who is responsible for the maintenance of a tertiary referral center for patients and their families suspected or known to have a genetic/metabolic disorder. The Inherited Metabolic Diseases clinic provides a diagnostic consultative service and ongoing nutritional, pharmaceutical and supportive therapy service for patients with inborn errors of metabolism. Outpatient services in 2002 included 123 new families seen, 205 return visits and 41 inpatient encounters. Staffing of this service includes the metabolic physician, clinical dietician, clinical nurse, psychologist, social worker, pharmacist and clerical support.

In the last five years more than 95 new DNA based diagnostic tests have been introduced. Cytogenetics provides routing chromosome banding techniques, fluorescence in situ hybridization (FISH) for clinically suspected microdeletion syndromes, and chromosome painting approaches to characterize chromosome rearrangements. The volume of testing in the Biochemical Genetics Lab has increased more than 20 per cent with the inauguration of the inherited metabolic disease clinic and the accompanying increases in the complexity of laboratory investigations.

PROVINCE WIDE SERVICES

Clinics and Home Services

These Province Wide Services include renal dialysis treatment and prevention, pre and post transplant services, islet cell transplantation, medical genetics, HIV clinics, poison and drug information services, home enteral nutrition, children with complex health care needs, craniofacial osseointegration (COMPRU) and paediatric transport.

Renal (Kidney) Dialysis

Alberta, like other jurisdictions, faces a rapid escalation in the number of patients with end stage renal disease, which presents significant planning and budgeting challenges. The escalation in renal patients is the result of an aging population, a rising incidence of renal failure, and growing prevalence brought about by improved survival rates. The treatment of renal disease already receives twenty per cent ($81.2 million in 2003/2004) of the total Province Wide Services budget, and the budget share continues to grow.

Alberta has two renal programs - The Northern Alberta Renal Program (operated by Capital Health) and The Southern Alberta Renal Programs (operated by the Calgary Health Region). These programs provide:

- In-Centre Hemodialysis
- Satellite Hemodialysis
- Assisted Self-Care Hemodialysis
- Home Dialysis
- Peritoneal Dialysis
- Pre-Dialysis Clinics
- Dialysis Clinics

About 82 per cent of dialysis patients are on hemodialysis, and the remaining 18 per cent receive peritoneal dialysis.

Table 10 and Figure 19 illustrate historical hemodialysis volumes. The Northern Alberta Renal Program has experienced average annual growth of 11.6 per cent in hemodialysis runs since 1996/1997. To manage increasing demand, the Capital Health Authority expanded the number of dialysis stations across Northern Alberta from 60 to 76 locations in 2001/2002.

The program has also initiated nocturnal hemodialysis treatments.

The Southern Alberta Renal Program has exhibited even higher activity growth rates, with an average growth rate in hemodialysis of 13.2 per cent since 1997/1998. In response to this growth, the program has added a new satellite unit in Olds that can handle 18-20 patients.

Province Wide Services funding for the two renal programs has been increased at an average annual rate of 20.3 per cent over the last five years - funding of $38.8 million in 1999/2000 has grown to funding of $81.2 million in 2003/2004. This large increase illustrates the need for preventative measures.

Table 10: Historical Hemodialysis Runs by Region

	96/97	97/98	98/99	99/00	00/01	01/02
HD Runs: CHA	46,095	50,028	56,942	63,709	69,360	79,715
HD Runs: CHR	n/a	50,017	59,243	69,775	74,234	82,165

Source: CHR and CHA PWS Annual Reports

Figure 19: Historical Hemodialysis Runs by Region

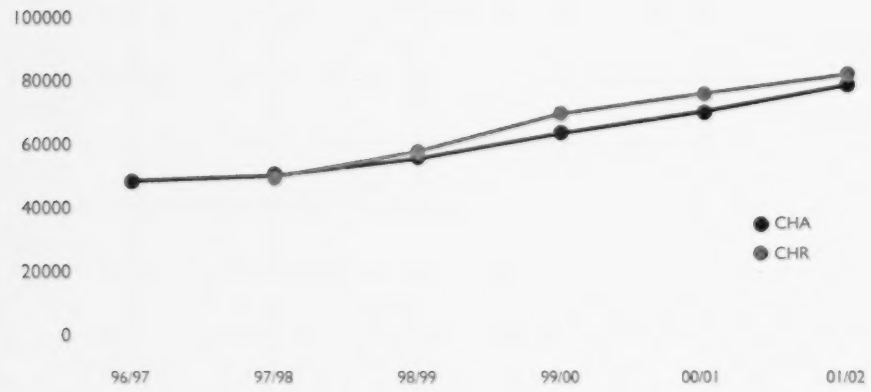

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Figure 19: Historical Hemodialysis Runs by Region

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Dialysis Delay/Prevention

Recognizing that prevention strategies should play a key role in addressing the expected continued growth in renal disease, in April 2001 Province Wide Services committed $3.2 million in new ongoing funding for dialysis prevention or delay initiatives.

Both the Calgary Health Region and the Capital Health Authority have since initiated specific prevention activities focussed on primary care. The Southern Alberta Renal Program has assembled multidisciplinary teams to work with recruited family physicians. The Northern Alberta Renal Program is providing diabetes education, hypertension clinics, renal outreach and public campaigns.

Pre and Post Transplant

In addition to the hospital inpatient component of transplants, Province Wide Services has also committed to fund any "pre and post" transplant activity of Calgary and Capital not already captured through the Global Funding provided to regional health authorities. Pre transplant activities include organ procurement, patient assessment, work-up, lab tests, diagnostic costs, education, counseling of patients and their families, while post transplant activity includes follow-up visits and lab tests.

Both Capital and Calgary are experiencing sharp growth rates in this area. This is the result of increased referrals and transplant cases, combined with better survival rates for transplant recipients. Capital has reported a 73 per cent increase in pre-transplant assessment in the past three years and a 75 per cent increase in post-transplant follow-ups.

In 2001/2002, total Province Wide Services funding for pre-and post-transplant services was increased by fifty per cent to $12.0 million, and by a further ten per cent to $13.2 million in 2002/2003. For 2003/2004, in a constrained budget environment, pre and post funding remained unchanged at $13.2 million.

Islet Cell Transplant

In 2001/2002, Province Wide Services funding was approved for islet cell transplant (Edmonton Protocol) centered at the University of Alberta Hospital. The Edmonton Protocol is a leading edge procedure that offers new hope to highly selected patients with unstable forms of Type 1 diabetes. Islets from a human cadaveric pancreas are purified and then injected into the patient's liver. Most patients require two transplants. In 2001/2002, 22 procedures were performed for Albertans. Since introduction of the Edmonton Protocol in 1998, the one-year success rate - excellent control of blood glucose and complete independence from insulin - is about 85 per cent.

It is anticipated that islet cell transplantation will replace the need for riskier whole pancreas transplantation, provided results of the islet infusion are sustained in the longer term. Changes to islet cell transplant will include the use of next-generation immunosuppressives (daclizumab, sirolimus, tacrolimus) and the establishment of an adjunct work-up clinic in Calgary.

Although there is an inpatient component (1-2 days) to the transplant, most of the cost is associated with harvesting and preparing the cell islets, as well as the lifelong requirement of anti-rejection drugs, and is therefore funded outside of PWS Inpatient funding. Province Wide Services has allocated $2.7 million for 32 islet cell transplant procedures in 2003/2004 (an average cost of $85,420 per procedure). This covers all of Capital's operating costs, including donor acquisition, isolation lab, pre-transplant assessment clinic and drugs.

Medical Genetics

The Departments of Medical Genetics at the University of Calgary and the University of Alberta provide medical genetic services to Albertans. Province Wide Services is providing $12.4 million to support Medical Genetics in 2003/2004.

Genetics is seen as an important component of health system reform, because it emphasizes disease prevention in a cost effective manner.

For 2001/2002, Capital Health reported a 26 per cent increase in cyto and molecular genetic tests (most of the growth was in molecular testing), while Calgary reported virtually no change. Capital is also responsible for the newborn screening tests for all of Alberta, reporting a 1.5 per cent increase in 2001/2002 to 118,912 tests.

HIV Clinics

Province Wide Services provides funding to the Northern and Southern Alberta Outpatient HIV Clinics in Edmonton and Calgary. The goal of these clinics is to improve the quality and length of life for people living with HIV infection, and facilitate easy access to the antiretroviral agents and expensive technologies used for staging HIV infection. These clinics also provide outpatient care and serve as centres of knowledge, research and education related to HIV. The clinics work collaboratively, as shown in the development of complexity-level patient reporting commencing in 2002/2003.

The use of triple drug therapy with protease inhibitors has resulted in increased length and quality of life for HIV patients and a dramatic reduction in the number of newly diagnosed AIDS cases and AIDS related deaths. However, this has also had a substantial cumulative impact on HIV clinic visits (see Table 11) and the drug budget as surviving clients remain on drug therapy for the rest of their lives.

In the Northern Alberta Clinic, the number of patients with AIDS and requiring antiretrovirals increased significantly in 2001/2002. The increase can be attributed to continued low numbers of HIV related deaths and the fact that AIDS patients receiving treatment are now experiencing longer life spans.

Additionally, case complexity is increasing, requiring additional social work, psychologist and psychiatrist resources as many of the clients live chaotic lifestyles and need assistance with social issues. There have also been volume increases in HIV positive women who are pregnant or have given birth over last year, requiring increased coordination with Public Health and monitoring of the antenatal and perinatal condition of clients and newborns.

In the Southern Alberta Clinic, the average age continues to be 41 years with the majority of the patients in the 31-50 age group. Of the 97 new patients referred to the Clinic in 2001/2002, 25 per cent were females. Aboriginal patients accounted for 8 per cent of the active population.

Table 11: Number of HIV Clinic Patients by Servicing Region

	97/98	99/00	00/01	01/02
Clinic Patients - Capital	768	790	943	941
Clinic Patients - Calgary	615	681	706	740

Source: CHR and CHA PWS Annual Reports

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The risk of acquiring HIV infection is 40 per cent for gay males, 36 per cent for injection drug users, 13 per cent for heterosexuals, and 11 per cent from endemic areas and pregnancy screening. About 66 per cent of patients at the clinic are on a three or more drug regimen.

Province Wide Services funding for the HIV clinics was $1.83 million for 2001/2002, growing to $2.2 million in 2002/2003, and $2.4 million in 2003/2004.

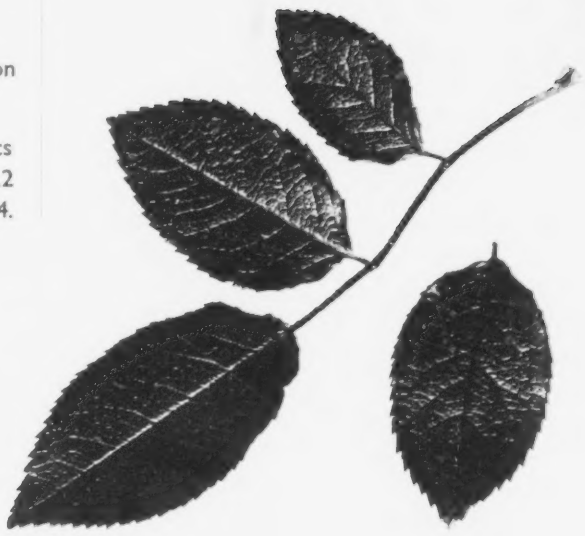

Figure 20: AIDS Cases, Deaths and Cumulative in Alberta, 1998 to 2001

Source: Alberta Health & Wellness. 2001 is preliminary data

Poison and Drug Information Service (PADIS)

The Poison and Drug Information Service operates out of the Foothills Medical Centre, providing the following services through its three main units: the Alberta Poison Centre offers information and advice on poisonings to the general public and to health professionals; the Drug Information Service offers information on drug therapy to health professionals; and the Toxline provides advice and information on toxins in the workplace to employees and workers in Alberta hospitals.

PADIS has witnessed a downward trend in call volumes (see Table 12). The decline in poison calls is the result of lower numbers in the at-risk preschool population, and perhaps less awareness in the general public. A lack of awareness is believed to be the cause of a similar drop in calls from health professionals. The downward drift in drug information service calls is attributed to the canceling of the PADIS newsletter due to staffing difficulties. To address the apparent awareness issues, a public awareness campaign was targeted at Northern Alberta in the fall of 2002, and at Calgary in the spring of 2003.

Table 12: **PADIS Incoming Calls**

	Number of Incoming Calls				
	1997/98	1998/99	1999/00	2000/01	2001/02
Poison Information	31,142	29,305	28,813	27,762	26,988
Drug Information	7,148	6,823	6,144	5,359	4,810
Occupational Toxicology	1,422	1,333	1,217	922	803

Source: CHR PWS Annual Reports

Home Enteral Nutrition

The Home Enteral Nutrition Program provides enteral nutrition at home to adults and children who cannot eat, or eat easily enough. The benefit is that it reduces the need for hospitalization, thereby enhancing the quality of life for clients and reducing the overall costs of the health care system.

Funding challenges for this service exist due to large increases in patient volumes (see Table 13) and supply costs. Costs per therapy day are rising due to improved technology: uptake of skin-level devices, ambulatory feeding pumps and the disposable supplies.

PWS funding for this program has been increased from $2.7 million in 2001/2002, to $3.0 million in 2002/2003, and to $3.4 million for the 2003/2004 budget year.

While Calgary reported more HEN patients in 1997/1998, Capital now has significantly more clients.

COMPRU

The Craniofacial Osseointegration and Maxillofacial Prosthetic Rehabilitation Unit (COMPRU) of Capital Health performs highly specialized reconstructions of the head and neck. The program has been a leader in utilizing a comprehensive quality management system.

One area of focus for COMPRU is the use of osseo (bone) integrated implant biotechnologies for prosthetic replacement of head/face defects. Province Wide Services only funds COMPRU for these high end osseointegration procedures. This funding has increased from $0.6 million in 2000/2001, to $1.0 million in 2001/2002, to $1.1 million in 2002/2003, and to $1.2 million in 2003/2004.

Table 11: Home Enteral Nutrition Patients, 1997/98 to 2000/2001

	CHA		CRHA	
	Pediatric	Adult	Pediatric	Adult
1997/98	206	206	304	155
1998/99	282	227	313	221
1999/00	356	327	360	265
2000/01	424	375	385	273
2001/02	455	423	420	274

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2001/02	455	423	420	274

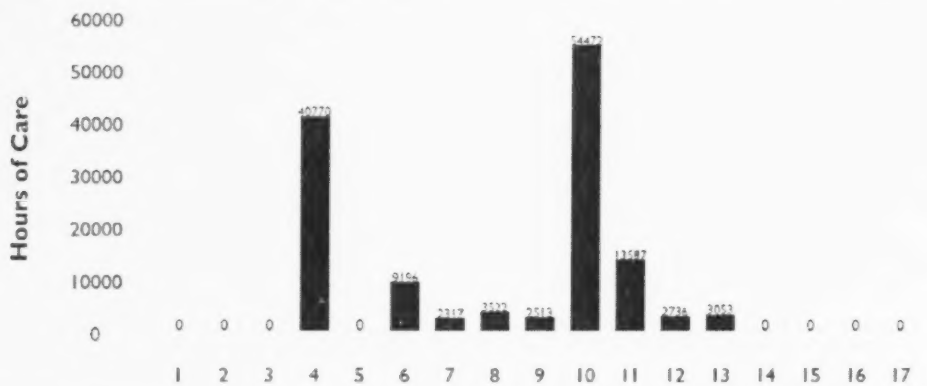
For 2001/2002, the number of reported osseointegration Alberta patients increased to 38 (up from 31 patients in the previous year), 25 of which were recipients of bone-anchored hearing aids. Also, there were 759 osseointegration visits (about 15 per week). Some progress was made in regard to the long wait times for COMPRU. The wait time for bone anchored hearing aids decreased from one year to six months by year end. While the wait time for extra oral patients needing prosthetic remakes also decreased, the average waiting time was still quite long (two years).

Children with Complex Healthcare Needs (CCHN)

The CCHN program is administered by the Calgary Health Region. It provides professional support (through the Pediatric Advisory Team) and financing to health regions for assisting children with life threatening complex health care needs. The program allows the highly specialized needs of these children to be met at home in a cost effective manner, and recognizing that "home" is the best environment for the children. The distribution of CCHN hours of patient care by patient region is shown in Figure 21.

Reported activity for this program includes monthly expenditures for each child. The number of funded child months grew at an average annual rate of 31 per cent between 1997/1998 (128 funded months) and 2002/2003 (492 funded months). The average cost per funded child month grew at an average annual rate of 7.2 per cent over this time period, rising from $5,413 per child month in 1997/1998, to $7,645 per child month in 2002/2003. Consequently, total expenditure by this program has increased from $344,000 in 1997/1998, to $3.8 million in 2002/2003. Funding of $4.5 million has been provided for 2003/2004. Although the funding increases have been high, it provides these patients with an alternative to hospitalization, thereby reducing overall costs to the health care system (excludes an analysis of health outcomes).

Figure 21: CCHN Hours of Care by Patient Region of Residence, 2001/2002



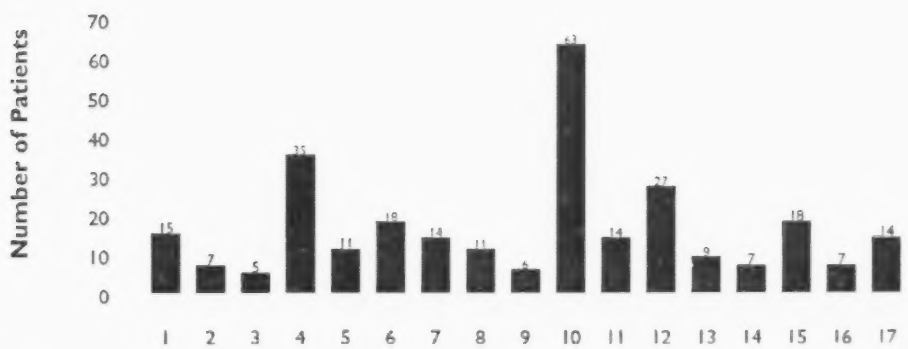
Source: CHR 2001/2002 PWS Annual Report

Pediatric Transport

The pediatric transport teams of the Calgary and Capital health regions provide assessment, intervention, stabilization and transport for critically ill/injured children. The transport teams consist of a specially trained registered nurse, respiratory therapist and pediatric emergency physician to reduce the risk of morbidity in these patients.

In 2001/2002, 194 patients were transported by Capital Health, compared to 57 patients transported by Calgary Health Region. The distribution of these paediatric patients by resident health region is shown in Figure 22.

Figure 22: Pediatric Transport Patients by Patient Region, 2001/2002

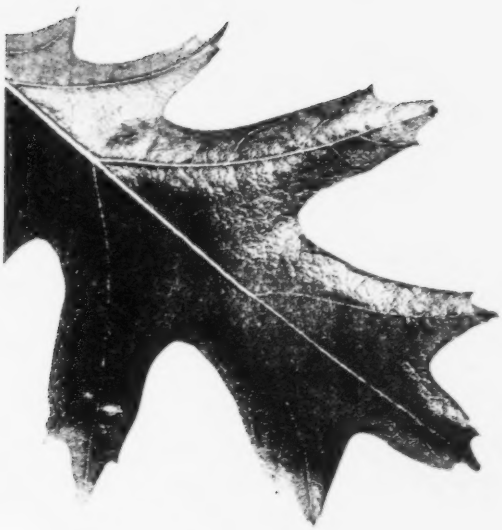


Source: CHA and CHR 2001/2002 PWS Annual Reports

PROVINCE WIDE SERVICES

High Cost Drugs

PROVINCE WIDE SERVICES
High Cost Drugs



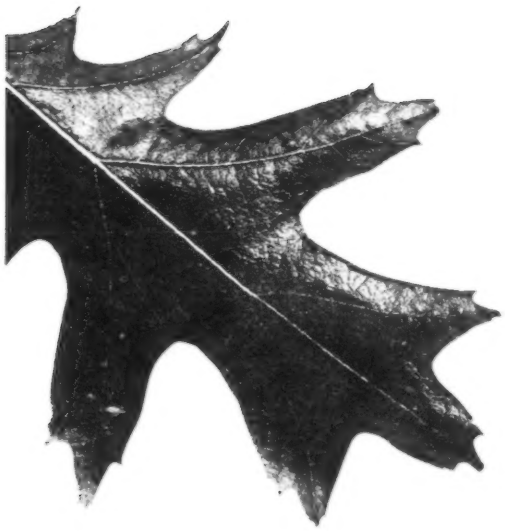
Province Wide Services funds ($37 million for 2003/2004) selected high cost drugs dispensed on an outpatient basis. Nearly 90 per cent of the funding is for immunosuppressive agents for transplant recipients, and antiretoviral drugs for HIV patients. Also funded are: Pulmozyme for cystic fibrosis patients, Human Growth Hormone for individuals with growth hormone deficiency or chronic renal failure, and Flolan/Tracleer for patients with primary pulmonary hypertension. Expenditure for the PWS high cost drugs (Table 14) has grown at a rate of about 10 per cent annually.

Table 14: PWS High Cost Drugs Expenditure

	Capital				Calgary			
	1999/00 ACTUAL	2000/01 ACTUAL	2001/02 ACTUAL	2003/04 FUNDED	1999/00 ACTUAL	2000/01 ACTUAL	2001/02 ACTUAL	2003/04 FUNDED
Immunosuppressives	7,078,819	7,822,336	8,870,996	12,753,400	4,861,720	4,894,348	5,212,582	7,227,805
HIV Antiretrovirals	4,010,254	4,355,673	4,938,938	5,846,170	4,249,591	4,925,644	5,320,529	6,126,230
Pulmozyme	705,145	700,665	714,910	801,090	424,458	455,116	551,905	490,590
Flolan/Tracleer/HGH	636,655	916,209	878,432	1,125,851	534,364	733,063	812,855	989,950
Emerging Drugs				500,000				500,000
Distribution Costs	219,616	228,709	307,695	320,000	330,000	340,000	365,088	320,000
Total Drugs	12,650,489	14,023,592	15,710,971	21,346,511	10,400,133	11,348,171	12,262,959	15,654,575

Source: CHR and CHA annual PWS reports, 2003/2004 PWS Budget

PROVINCE WIDE SERVICES
High Cost Drugs



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Flolan/Tracleer/HGH	636,655	916,209	878,432	1,125,851	534,364	733,063	812,855	989,950
Emerging Drugs				500,000				500,000
Distribution Costs	219,616	228,709	307,695	320,000	330,000	340,000	365,088	320,000
Total Drugs	12,650,489	14,023,592	15,710,971	21,346,511	10,400,133	11,348,171	12,262,959	15,654,575

Source: CHR and CHA annual PWS reports, 2003/2004 PWS Budget

Transplant Drugs

Transplant drugs, or immunosuppressants, help prevent transplant patients from rejecting their transplanted organs. Transplant patients generally require these agents for the duration of their lifetime. A promising new generation of drugs, including Tacrolimus, Sirolimus and Daclizumab, is beginning to replace traditional transplant drug therapies and improve outcomes.

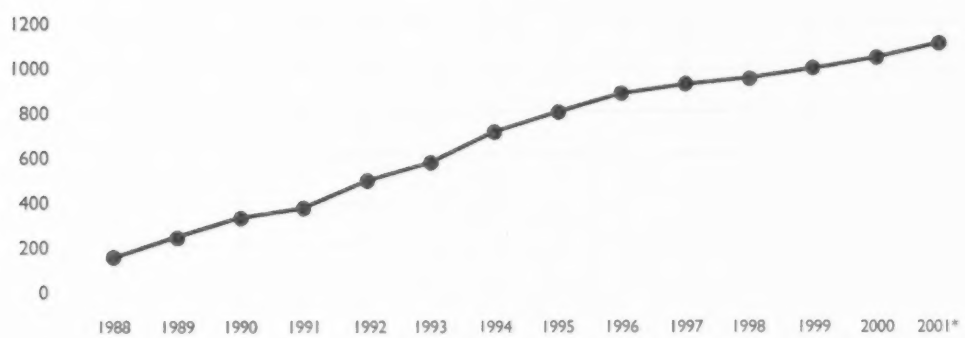
Transplants drug expenditures are the fastest growing component of the PWS high cost drug budget, growing at an average annual rate in excess of 14 per cent.

HIV Drugs

The Northern and Southern Alberta HIV Clinics distribute drugs, on an outpatient basis, to patients with human immunodeficiency virus Type 1 (HIV-1) infection. Since around 1996, there has been markedly improved success of the drug therapies in keeping HIV patients alive, thereby increasing the prevalence of HIV patients (Figure 23). Although these effective antiviral medications are very expensive, the total cost of care for adults with HIV infection has been shown to have declined, on average, because of decreases in other resources for the care of these patients.

The HIV drugs expenditure growth rate exhibits a fair degree of variability due to the constant evolution of drug protocols and the uncertain movement of drugs from special access or research status to market status.

Figure 23: Cumulative Number of HIV Patients in Alberta, 1988 - 2001



Source: Alberta Health & Wellness. 2001 is preliminary data

PROVINCE WIDE SERVICES

High Cost Devices

PROVINCE WIDE SERVICES

High Cost Devices

Province Wide Services funds Calgary and Capital for the capital cost of three expensive devices: implantable cardiac defibrillators (ICDs), cranioplasts, and cochlear implants (Table 15). This is another high growth area for the PWS budget. Funding has increased from $3.3 million in 2000/2001, up to $6.5 million in 2003/2004.

Implantable Cardioverter Defibrillators (ICDs)

The ICD is effective in correcting life-threatening heartbeat abnormalities, thereby helping to prevent sudden cardiac death. ICDs provide high risk patients with a higher quality of life and superior outcomes to antiarrhythmic drug therapy. Clinical trials have demonstrated approximately a 50 per cent reduction in 3-year mortality for ICD therapy, versus about a 27 per cent mortality reduction from pharmacologic therapy. Device lifespan is typically five to seven years.

Advances in this technology-intensive branch of medicine are occurring rapidly, leading to device improvements and expanding indications based on the results of recently completed clinical trials. This has resulted in escalating growth rates for this device. The first ICD was implanted in Alberta in 1985. During 2001/2002, 175 ICDs were provided to Albertans (slightly above Canadian rate). For 2003/2004, 199 devices have been funded at an average cost of $22,500.

Table 15: **PWS High Cost Devices - Volumes**

	Calgary Health Region					Capital Health				
	1999/00 ACTUAL	2000/01 ACTUAL	2001/02 ACTUAL	2002/03 FUNDED	2003/04 FUNDED	1999/00 ACTUAL	2000/01 ACTUAL	2001/02 ACTUAL	2002/03 FUNDED	2003/04 FUNDED
ICDs	73	76	93	80	110	57	57	82	66	89
Cranioplasts	120	148	154	145	157	35	54	41	45	67
Cochlear Implants	14	10	15	16	20	9	26	17	13	20

Source: CHR and CHA PWS Annual Reports, plus PWS Budgets for 2002/03 and 2003/04

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Source: CHR and CHA PWS Annual Reports, plus PWS Budgets for 2002/03 and 2003/04

Cranioplasts

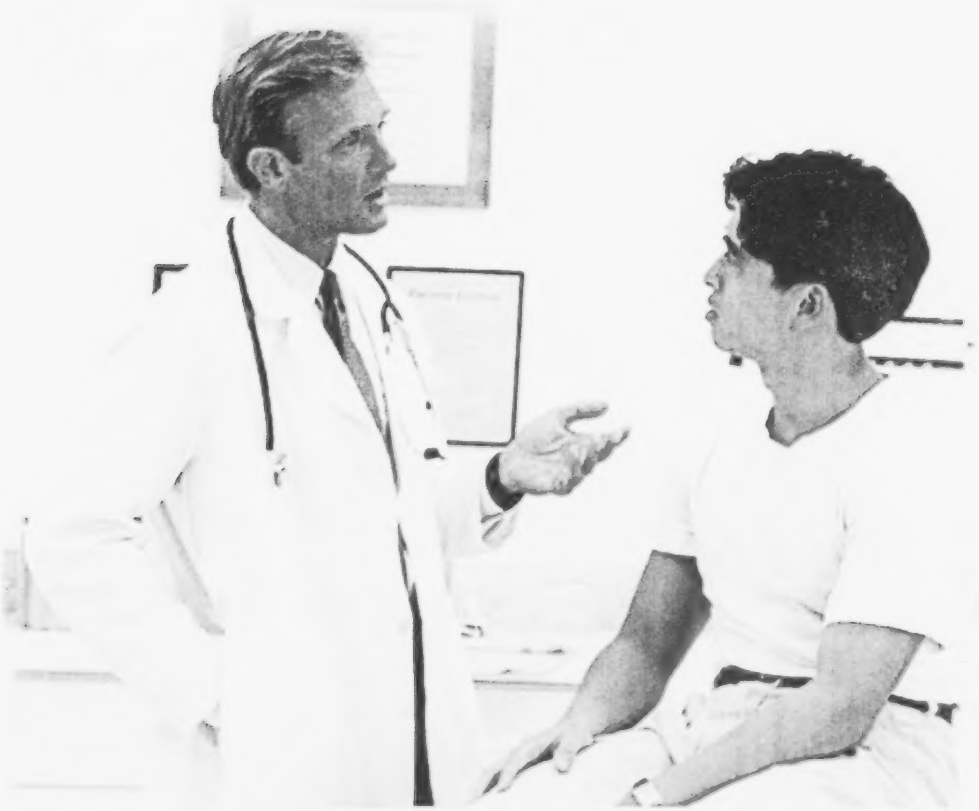
Cranioplasty involves correction of skull defects through specialized headbands. It can only be done as a paediatric procedure, when the skull is malleable. The program in Calgary has been a Canadian leader.

During 2001/2002, 195 infants received cranioplasts funded by Province Wide Services. For 2003/2004, funding for 224 cranioplasts has been approved, at an average cost of $2,900.

Cochlear Implants

The most common type of deafness is caused by damaged hair cells in the cochlea. Cochlear implants are electrical devices that receive sound and transmit the resulting signal directly to electrodes implanted in the cochlea. These devices allow hearing-impaired individuals to perceive sound. The procedure requires highly specialized expertise.

During 2001/2002, 32 Albertans received cochlear implants. For 2003/2004, funding for 40 devices, at an average cost of $35,200, has been approved.



PROVINCE WIDE SERVICES

Other Province Wide Services

PROVINCE WIDE SERVICES
Other Province Wide Services

Equipment

Some funding is provided to Calgary and Capital for Province Wide Services equipment above and beyond the equipment amortization already included in the cost weights used for funding purposes. For 2003/2004 fiscal year, $2.0 million has been allocated to both Capital Health and the Calgary Health Region.

APPROACH

The **A**lberta **P**rovincial **P**roject for **O**utcomes **A**ssessment in **C**oronary **H**eart Disease (APPROACH) involves maintenance of a large computerized cardiac database. This database is used for research on outcomes, and provides a source of data that allows Capital and Calgary to deliver the best possible care for patients with coronary artery disease. Regular PWS funding of $150,000 per annum is intended to provide APPROACH with a stable and sustainable source of funding.

Rosehaven

The Rosehaven Care Centre in Camrose provides beds and a specialized geriatric service for people with psychiatric or behavior management needs. Rosehaven was moved to the Province Wide Services funding umbrella starting in 2003/2004. Funding of $7.9 million has been provided to East Central Health, an increase of 5 percent from the previous year.

Visudyne Therapy

Age-related macular degeneration (AMD) is the leading cause of blindness in Canadians over the age of 50. Ocular photodynamic therapy uses the laser-activated drug Visudyne to treat the classical form of wet AMD, when prescribed by a Retina Specialist. Multiple treatments are usually required on each affected eye. For the 2003/2004 budget year, funding for Visudyne therapy was increased by 10 per cent, to $3.3 million.

PROVINCE WIDE SERVICES

Apendices

APPENDIX A:

Hospital InPatient CASE GROUPS

Currently Funded By Province Wide Services

CMG	DESCRIPTION
	Organ & Bone Marrow Transplants
175	Heart and Lung Transplant
310	Liver Transplant
500	Kidney Transplant
700	Bone Marrow Transplant
	Trauma and Burns
650	Tracheostomy and Gastrostomy Procedures for Trauma
	only separations with one or more of the following procedures coded in any position:
	3129 - Other permanent tracheostomy, 311 -Temporary tracheostomy
651	Intracranial Procedures with Spinal Procedures for Trauma
652	Intracranial Procedures with Femur Procedures for Trauma
653	Intracranial or Femur PROCs with Thoraco-Abdominal PROCs for Trauma
654	Intracranial PROCs w wound Debridement or Lower Extremity PROC for Trauma
655	Spinal Procedures with Femur Procedures for Trauma
656	Spinal Procedures with Thoraco-Abdominal Procedures for Trauma
657	Spinal PROCs with Wound Debridement or Lower Extremity PROC for Trauma
660	Intracranial Procedures for Trauma
661	Spinal Procedures for Trauma
665	Elevated Skull Fractures
674	Intracranial Injuries with Spinal Injuries
675	Intracranial Injuries with Fractures of Femur or Pelvis
676	Intracranial Injuries with Thoraco-Abdominal Injuries
830	Extensive Burns with Skin Graft Wound Debridement or Other Burn Procedures
	Neurosurgery
001	Craniotomy Procedures
003	Spinal Procedures
004	Extracranial Vascular Procedures
005	Ventricular Shunt Revision
476	Adrenal and Pituitary Procedures

Cardiovascular

176	Cardiac Valve Replacement with Heart Pump with Cardiac Cath
177	Cardiac Valve Replacement with Heart Pump without Cardiac Cath
178	Coronary Bypass with Heart Pump with Cardiac Cath
179	Coronary Bypass with Heart Pump without Cardiac Cath
181	Other Cardio-Thoracic Procedures with Heart Pump with Cardiac Cath
182	Other Cardio-Thoracic Procedures with Heart Pump without Cardiac Cath
183	Major Cardio-Thoracic Procedures without Heart Pump with Cardiac Cath
184	Major Cardio-Thoracic Procedures without Heart Pump without Cardiac Cath
188	Percutaneous Transluminal Coronary Angioplasty W Complicating Cardiac Conditions
189	Percutaneous Transluminal Coronary Angioplasty W/O Complicating Cardiac Conditions
194	Minor Cardio-Thoracic Procedures without Heart Pump
885	Aortic Replacement

Neonatology

625	Neonates Weight < 750 Grams
626	Neonates Weight 750-999 Grams
627	Neonates Weight 1000-1499 GM with Catastrophic Diagnosis
628	Neonates Weight 1000-1499 GM without Catastrophic Diagnosis
630	Neonates Weight 1500-1999 GM with Catastrophic Diagnosis
643	Neonates Weight > 2500 GM with Catastrophic Diagnosis

Oncology

383	Joint Replacement for Malignancy
384	Back and Neck Procedures for Malignancy
385	Major Orthopaedic Oncology Procedures
575	Pelvic Externation
576	Radical Hysterectomy and Vulvectomy

Other

075	Radical Laryngectomy and Glossectomy
076	Major Head and Neck Procedures
126	Resection of Lung

APPENDIX B:
Province Wide Services
Working Group (2002/2003)

Dr. Paul Greenwood, Chair

Mr. Bryan Judd,
VP Corporate Support Services ..... **Region 4**

Dr. Ken Gardener,
VP Medical Affairs ..... **Region 6**

Mr. Allaudin Merali,
VP Finance ..... **Region 6**

Dr. Robert Johnston,
VP and Chief Medical Officer ..... **Region 3**

Ms. Kay Best,
VP Corporate Services and CFO ..... **Region 3**

Mr. Bruce M. Perry,
ADM – Finance & Corporate Services ..... **Alberta Health and Wellness**

Mr. Tapan Chowdhury,
Director – Health Funding and Costing ..... **Alberta Health and Wellness**

Mr. Dennis Stang,
Senior Manager – Health Funding ..... **Alberta Health and Wellness**

APPENDIX C:
PWS 2003/2004 Budget

	CAPITAL	CALGARY	Total
INPATIENT SERVICES	**$117,816,703**	**$106,831,671**	**$224,648,374**
Transplants - Bone Marrow	0	9,978,088	9,978,088
Transplants - Organ	13,357,792	1,297,959	14,655,751
Trauma and Burns	11,116,371	7,845,638	18,962,009
Neurosurgery	14,232,968	13,147,296	27,380,264
Cardiovascular - CABGs	19,384,812	20,097,100	39,481,912
Cardiovascular - PTCAs	18,105,837	20,127,259	38,233,096
Cardiovascular - Other	18,414,194	15,266,463	33,680,657
Neonatology	17,146,515	14,586,107	31,732,622
Oncology	6,058,214	4,485,761,	10,543,975
CLINICS and HOME SERVICES	**63,992,440**	**67,462,000**	**131,454,440**
Dialysis and Renal Program	40,748,000	40,487,000	81,235,000
Dialysis Prevention	1,660,000	1,660,000	3,320,000
Pre and Post Transplant	6,600,000	6,600,000	13,200,000
Islet Cell Transplantation	2,733,440	0	2,733,440
Medical Genetics	6,140,000	6,231,000	12,371,000
HIV Clinics	1,210,000	1,210,000	2,420,000
PADIS	0	2,609,000	2,609,000
COMPRU (osseointegration)	1,190,000	0	1,190,000
Home Enteral Nutritional Therapy	1,691,000	1,691,000	3,382,000
Paediatric Transport	700,000	700,000	1,400,000
1-800 AIDS Hotline	120,000	0	120,000
Education Centre	0	624,000	624,000
STD/TB Clinics	1,200,000	1,150,000	2,350,000
Children w/Complex Healthcare Needs	0	4,500,000	4,500,000
HIGH COST DRUGS	**21,346,511**	**15,654,575**	**37,001,086**
Transplant Drugs	12,753,400	7,227,805	19,981,205
HIV Drugs	5,846,170	6,126,230	11,972,400
Human Growth Hormone	585,875	625,950	1,211,825
Pulmozyme	801,090	490,590	1,291,680
Flolan/Tracleer	539,976	364,000	903,976
Emerging Drugs	500,000	500,000	1,000,000
Distribution costs	320,000	320,000	640,000
HIGH COST DEVICES	**2,900,800**	**3,634,300**	**6,535,100**
Implantable Defibrillators	2,002,500	2,475,000	4,477,500
Cranioplasties	194,300	455,300	649,600
Cochlear Implants	704,000	704,000	1,408,000
EQUIPMENT	**2,000,000**	**2,000,000**	**4,000,000**
APPROACH	**0**	**150,000**	**150,000**
ROSEHAVEN (Region 5)			**7,900,000**
OCULAR PHOTODYNAMIC THERAPY	**1,788,000**	**1,485,000**	**3,273,000**
TOTAL PWS			

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INPATIENT SERVICES	**$117,816,703**	**$106,831,671**	**$224,648,374**
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EQUIPMENT	**2,000,000**	**2,000,000**	**4,000,000**
APPROACH	**0**	**150,000**	**150,000**
ROSEHAVEN (Region 5)			**7,900,000**
OCULAR PHOTODYNAMIC THERAPY	**1,788,000**	**1,485,000**	**3,273,000**
TOTAL PWS	**209,844,454**	**197,217,546**	**414,962,000**